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ITS SPRINGS AND THEIR USES.

J. GROEDEL, M. D.

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BAD-NAUHEIM.

ITS SPRINGS AND THEIR USES,

WITH

USEFUL LOCAL INFORMATION AND A GUIDE TO THE ENVIRONS,

BY

J. GROEDEL, M. D.,
MEDICINALRAT; PHYSICIAN IN BAD-NAUHEIM.

SECOND EDITION.

(FROM THE GERMAN GUIDE TO BAD-NAUHEIM BY O. WEISS AND J. GROEDEL).

FRIEDBERG and BAD-NAUHEIM.
CARL BINDERNAGEL, PUBLISHER.
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PREFACE.

At the special request of the publisher I have undertaken to edit a book in the English language describing Nauheim, its baths, mineral waters etc. and having special reference to a similar work in the German language edited by myself and Mr. O. Weiss, Geheimer Bergrat and President of the Grand-Ducal Bade-Direction.

This work will be found to contain all the information about local matters that physicians and guests residing in Nauheim can desire, also some useful hints concerning the mineral springs, their uses in various kinds of chronic diseases and some remarks about the diseases themselves. I have likewise added a short guide describing the walks and excursions in the environs of Nauheim.

In this work I think I am meeting the needs of many, giving information to those English-speaking visitors, who are not thoroughly con-

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versant with the German language. I hope too that it will have the effect of making the well-deserved popularity and repute of Bad-Nauheim even more widely known than they are at the present day.

Bad-Nauheim, August 1895.

J. GROEDEL.

PREFACE TO THE SECOND EDITION.

The success attending the first edition of this English guide-book has induced me to publish a second. In doing so I have endeavoured to keep as nearly as possible to the original form. Of course the enlargement and improvements that have, in the meantime, taken place in the bathing-establishments have been taken into consideration. One chapter, however, that of the "Treatment of Heart-Disease" has been considerably lengthened, as I thought it advisable to give more particulars about "Arterio-sclerosis" and the use of gymnastics in the treatment of disordered circulation.

Bad-Nauheim, March 1899.

J. GROEDEL.

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forts, the Old-Ger[illegible] aintained a constant struggle with the Romans for the possession of the valuable salt-springs. We have, however, no trustworthy account whatever either of the opening of the salt-works or the origin of the town of Nauheim. It is not until the

13th century that we find the first documental information about Nauheim; another document bearing the date of 1457 informs us that a guild of salt-makers had been in existence for many years. The salt-works and the town of Nauheim changed hands frequently in the course of centuries, partly through inheritance and partly through wars. Since 1866 the town, which now contains about 4000 inhabitants and about 700 dwelling-houses, has belonged to the Grand Duchy of Hesse-Darmstadt.

The erection of the first bath-house, containing only 9 baths, took place in 1835. As these were soon found to be inadequate, another larger bath-house, provided with 32 baths, was added in the year 1850 and then, two years later, another of exactly the same size; these are the two still existing bath-houses Nos. I and II. The old bath-house was then turned into a restaurant -- at present the small hotel Kursaal near the drinking fountains — opposite which a provisional casino was built, that served as assembly rooms for the visitors until the year 1864, in which year the present casino, the *Kurhaus*, erected on a higher elevation, was completed and opened. During this time a new quarter of the town had sprung up, called into existence by the necessity of providing accommodation for the ever increasing number of guests. Near this new part there now arose an extensive and

beautifully laid out park, terminating on the north side in a large lake and on the west in the well-wooded Johannisberg.

Fresh borings were then made and new mineral-springs were thus added to those already in existence; these new springs were, and are still employed partly for baths and partly as drinking waters. This unusual abundance of natural remedies and the good results thereby obtained in many different sorts of diseases, in addition to the comforts and conveniences offered, caused the number of visitors to increase continually. It was therefore found necessary to erect a third bath-house, No. III, containing 52 bath-rooms, which was opened in the year 1866. Some time before this a large hall and a covered promenade flanked by two pavilions were erected near the drinking fountains. In one of these pavilions all kinds of mineral waters, fresh milk and whey are supplied to visitors; the other has, since the year 1880, contained a hall for the inhalation of saline and other medical sprays. From 1871 till 1880 a comparative standstill occurred in the development of Nauheim, which was however soon followed by a still more rapid advancement. In order to better illustrate the progressive development of this watering-place I here quote a few figures, showing the number of visitors to Bad-Nauheim and of baths taken at different periods.

Year	Visitors	Baths
1835	95	2346
1845	405	7251
1855	2525	22599
1865	3866	27360
1871	5249	56664
1875	4479	53118
1880	4459	53355
1885	5248	71545
1890	8555	112289
1895	14136	186884
1898	19534	260119

The rapid increase in the number of visitors to Bad-Nauheim during the last decade necessitated the erection of other bath-houses. The bath-house No. IV, with 32 bath-rooms, was finished in the year 1888, No. V, with 50 bath-rooms, in 1892, and No. VI, with 62 bath-rooms, in 1898. Thus we have at present 6 bath-houses, containing in all 260 bath-rooms. All the bath-houses, except No. IV, are grouped round the springs, which supply them with water. No. IV is situated at some distance off and near the *Gradirhäuser* (brine-graduating works), two of which are also used for therapeutic purposes, about which we shall have more to say later on. The Medico-Mechanical (Gymnastic) Institute, in use since 1893, lies also in that direction.

It will easily be understood that with the number of guests continually on the increase,

the dwellings necessary for their accommodation must also multiply in a corresponding degree. Thus a large number of beautiful, airy, well-built villas and hotels have arisen, mostly situated on the outskirts of the park and comfortably fitted up, containing all the modern sanitary improvements. Much has also been done to embellish and improve the town. Beautiful promenades have been laid out in the vicinity, and pleasant walks made through the woods and on the neighbouring hills, so that a patient coming here may not only find health and strength, but may also make an agreeable stay at Bad-Nauheim.

CLIMATE OF NAUHEIM AND ITS SANITARY ARRANGEMENTS.

Although Bad-Nauheim cannot perhaps lay claim to all those attributes which belong, in the strictest sense of the word, to a climatic health-resort, yet it possesses many advantages, which are wanting in other watering-places.

Its being situated near a range of mountains and in close proximity to extensive woods gives the air a certain freshness which delights every one, more especially those who habitually dwell in large towns. For the same reason the nights are always cool, even after the hottest days, and the open situation of the town, combined with the fact that many of its streets have houses only on one side and these being surrounded by large gardens, effectually prevents stagnation of the air. The large park and the long avenues offer sufficient shade, so that, even in the very hot season, the heat seldom becomes oppressive. For those who like to seek out cool places during the warm weather the *graduating-*

house will be found a most reviving and refreshing resort, while again others may prefer the breezy summit of the Johannisberg or the cool shade of the wood.

The purity of the air of Bad-Nauheim is universally commended and although one patient may occasionally find it "too mild", another "too bracing", yet the same thing might be said of every health-resort. This is only the result of idiosyncrasy caused by the wonderfully varied reactions of the nervous system in different persons, even under exactly the same external influences. How frequently do we find, for instance, that sea-air will agree best with one patient, whereas for another, under the very same circumstances, mountain-air is found most beneficial.

Moreover the sanitary arrangements of the town, and especially the improvements that have been made during the last few years, would satisfy the most scrupulous and exacting physician. The whole town is now intersected by a network of drains, which are laid down according to the latest system. All the waste and drain water is carried far outside the town to a distant clarifying basin, where the water is purified and conducted to the Usa at half an hour's distance from the town lower down the river.

All the houses are supplied, by means of pipes, with a pure, fresh drinking water, which is examined and analysed at the Hygienic Institute

of the University of Giessen at stated periods. The closets are everywhere supplied with flush-water and are under the control of the sanitary police. The streets are kept as free from dust as possible by being repeatedly watered, either with the hose or the watering-cart. The paths in the park are every year, and at no small cost, strewn with crushed gravel, which is almost entirely free from dust. For this reason and owing to the fact, that Nauheim is situated on the slope of a mountain-range, the paths quickly become dry, even after the heaviest shower of rain, and also after continued rainy weather the under-surface of the ground is not wet to any depth.

There are three hospitals in Nauheim for poor people suffering from chronic diseases: the *Kurhospital Konitzky-Stift* for adults, the *Elisabeth-haus* and the *Israelitische Kinderheilstätte* for children. The two first-mentioned have bath-houses of their own. Three years ago a long felt need was supplied by the erection of a new hospital for cases of acute disease. The regulating of the bed of the Usa river will complete all the sanitary improvements that could be wished for the town and we shall then, with justice, be able to say that Bad-Nauheim has reached the height of perfection as regards its sanitary arrangements.

THE NATURAL REMEDIES AND OTHER CURATIVE RESOURCES OF BAD-NAUHEIM.

Of all the numerous brine springs and wells that have, from time to time, been sunk so as to obtain as high a percentage of brine as possible, only five are still in use; two of these alone are employed to supply the baths, viz., the Great Sprudel, or Spring No. 7, and the Friedrich-Wilhelms-Quelle, or Spring No. 12. The sinking of the former of these springs was begun as early as 1839, but the desired result not being obtained, the works were entirely abandoned in the year 1841, having reached a depth of 160 metres. Quite unexpectedly, however, on December 22nd, 1846, a powerful spring, with 31.6° Cels. (88.9° Fahr.) of warmth and more than 3 per cent of salt, forced its way through the covered up sinking-shaft. As this spring was the strongest of any existing at that time, it received the name of the "Great" Sprudel. At present, however, this is no longer the strongest, for the one situated

close to it, sunk in the years [illegible]—[illegible], to a depth of [illegible] metres. Spring [illegible] or the Friedrich-Wilhelms-Quelle surpasses it by far in the quantity of water produced, has one per cent more salt and is [illegible] warmer, being 95.5° Fahr. When the regulating cock of the discharge pipe is turned on full, which takes place every Sunday afternoon between four and five o'clock, the column of water mounts to a height of 14 metres. The projecting force is the carbonic acid, which in endeavouring to make its escape throws the water up into the air, somewhat in the same way as it does on opening a bottle of soda-water or champagne. Carbonic acid is altogether the most important ingredient of our springs; in fact they contain a larger quantity than any other known spring. Another peculiarity which distinguishes these springs is the great quantity of salts that they contain, especially of some very strong salts, such as chloride of calcium, chloride of potassium and chloride of magnesium. They also contain a great quantity of iron. Added to these peculiar properties they also have the advantage of natural warmth. An exact analysis of all the springs at present in use will be found annexed to this book.

By means of existing contrivances the water of the two springs can be applied for entirely different sorts of baths, which I will now endeavour to enumerate and explain.

THE DIFFERENT SORTS OF BATHS.

1) ORDINARY BRINE BATH *(gewöhnliches Soolbad)*. The water that rises with such force from the interior of the earth falls directly into large reservoirs, from which it is carried, by means of pipes, partly to the different bathing-houses and partly to the salines or salt-works, where the brine is made into salt. A line of pipes conducts the water from Spring No. 7 to bath-house No. IV. Before entering it the water is made to pass through a graduating-house, whereby the carbonic acid is removed and the water purified from undissolved particles. This water is then only used for preparing baths free from carbonic acid, i. e., the so-called "simple" brine baths, which greatly resemble the Kreuznach baths, but are considerably stronger. These baths can be given with any temperature or strength required: fresh water being added if a weaker bath is desired, or some of our excellent mother-lye *(Mutterlauge)*, when a stronger bath is prescribed.

2) THERMAL BRINE BATH *(Thermalbad)*. These baths are given in the bathing-houses II, III, V and VI. Here the brine comes direct from the spring-reservoir with almost its natural warmth — thence the name "thermal" brine bath — that is to say 29½—32½° Cels. (85—90½° Fahr.), according to medical direction, either from

one spring alone or from both, mixed in varying proportions and containing from 2 to 3½ per cent of salt, just as may be desired. These baths contain a considerable quantity of carbonic acid held in solution — not the full amount possessed by the spring, as a part of it is lost in the rising and falling of the fountain.

By this escaping of carbonic acid a certain part of the calcareous and ferruginous salts, which had been kept dissolved in the water by the carbonic acid, becomes insoluble, which can clearly be perceived by looking at the fountain; this gives the water a dull yellowish colour.

3) EFFERVESCENT BATH *(Sprudelbad)*. To the main pipes, which lead directly to the fountain itself, lateral subterranean pipes have been attached, so that the water is brought straight from the interior of the earth into the baths, without having anywhere come in contact with the air. It is in this way that bathing-house No. I is supplied from Springs 7 and 12 and the bathing-houses No. V and VI from Spring 12 alone. The water thus containing its full amount of carbonic acid, reaches the bath in an integral state and as clear as crystal, with only a slight diminution in its natural warmth, having 30½° and 33½° Cels. (87° and 92° Fahr.) respectively. The amount of salt contained is the same as that in the thermal baths and can be both increased and diminished. The temperature of

the baths can also be altered at will, and this frequently occurs by its being cooled down with ice.

4) CURRENT THERMAL BRINE BATH AND CURRENT EFFERVESCENT BATH *(Strombad* and *Sprudelstrombad)*. A greater effect on the organism is to be obtained from the thermal baths, as well as from the effervescent baths, by keeping up a continual flow of water through the baths, and this is effected by leaving the filling and emptying pipes open and letting the water run continually into the bath and out again with an ever equal temperature. These baths are a specialty of Nauheim.

5) SHOWER-BATHS (bathing-houses Nos. III and IV). These baths are sometimes used in connection with other baths, but can also be taken by themselves. The existing improvements enable us to apply brine and fresh-water shower-baths of all sorts in many different degrees of strength and temperature.

6) HIP-BATHS. These baths are prepared either with thermal brine containing gas or with brine free from carbonic acid.

7) FRESH-WATER-BATHS in bathing-house No. IV.

8) COLD-WATER-BATHS in the lake.

Another establishment for swimming-baths has been proposed.

THE BATHING-HOUSES are all built on a common ground-plan. In the centre lies the waiting-room, with two long wings containing bath-rooms on either side. In the waiting-room of bathing-house No. VI is a ticket-office for bath-tickets and one for season-tickets *(Kurkarten)*. During the high season bath-tickets are to be had at both offices in bath-house No. VI, the season-tickets at the office in the waiting-room of bath-house No. II. In the first floor of bathing-house No. I is the consulting-room of the President of the *Bade-direction*; in the centre building of bathing-house No. III is the dwelling of the Commissioner of baths, and in the north pavilion of the same house lives the manager of the bath-attendants. The fittings of the older bathing-houses are very simple, every later building, however, is more complete than the preceding one, so that the two last — bathing-house No. V and VI — are in every respect models of their kind and excite the admiration of every one. The bath-tubs are made of wood in all houses without exception, as this material has been found, after many trials with other sorts of receptacles (porcelain, glass, metal etc.), to be the most serviceable, both as regards its power of resistance against the destroying influences of the thermal brine, as well as on account of its greater comfort in use. Over each bath is fixed an appliance for shower-baths, which can be used

either as a strong water-spout or a gentle spray douche. By the side of each bath there is a receptacle for the warming of the bath-linen. Steps, benches and other arrangements to facilitate the getting in and out of the baths are kept at hand in all the bathing-houses and are to be had by applying to the bathing attendants.

The prices of the baths as well as other informations about them are given in an extract of the bathing-regulations, which will be found in the appendix of this book.

THE GENERAL EFFECTS OF THE BATHS.

The views and opinions of medical men on this subject, which for a long time have been so diverse, are now becoming clearer and more unanimous. I can, in this place, only touch upon the principal points.

It is now universally acknowledged that the aim of taking these baths is not that the body absorbs anything from the bath, and that this absorption influences the composition of the blood and tissues, but that in all the baths a peculiar irritating effect on the ramification and completion of the nerves in the skin takes place; this irritation is then transferred from the terminal nerves to the central parts of the nervous system and thus an effect on the entire body is obtained.

The irritation of the cutaneous nerves, caused by the baths, is partly of a thermic, partly of a chemical and partly of a mechanical nature. By its means we are enabled to influence the heart's action, the respiration, the blood-pressure, the entire circulation of the blood and the warmth of the body, etc.; it is thus in our power to promote and regulate the change of tissue to an astonishing degree, to effect the absorption of products of diseases and their excretion from the body, to excite the formation of healthy tissues by means of suitable dietetic regulations, and to produce a better nourishment and strengthening of the whole organism, as well as of any locally diseased part of it.

That which especially distinguishes the Nauheim baths from others is the variety of irritants contained in them, which, as above mentioned, constitute the efficacy of all baths. The Nauheim springs have a natural warmth, which exactly suits very many diseases; they are abundant in salts and possess a quantity of iron and carbonic acid unsurpassed by any other chalybeate baths. Thus we have here a fortunate combination of all those properties, each one of which found alone would be sufficient to establish the reputation of a watering-place. Thus Bad-Nauheim, on account of the natural warmth of its baths, resembles Wildbad, Ragatz, Gastein, Wiesbaden etc., for the amount of its salts Kreuznach, Reichen-

hall etc. and on account of its abundance of carbonic acid and iron it resembles Schwalbach, St. Maurice, Franzensbad, Pyrmont, Spa etc. Finally, the arrangement is such as to allow baths of all kinds to be given, from the weakest to the strongest.

One point more I should like to mention, as it is of especial importance in the method of prescribing baths that is usually employed here for some kinds of diseases. This is, that the large amount of carbonic acid found in our baths makes it possible for us to prescribe a much cooler temperature than is the case with other baths, as the peculiar irritation caused by the carbonic acid produces a sort of warm feeling so that the unpleasantness of cool baths is much less felt. But the advantages of the cooler baths compared with the warmer ones, for diseases in general and for some in particular, I cannot quote fully here, as it would lead me further than the limits of the present work permit.

THE MINERAL DRINKING-WATERS.

We have three springs at our disposal for supplying drinking-waters, two of these — the Kurbrunnen being the stronger and the Karlsbrunnen the weaker — belong to the so-called effervescent saline purgative waters and are similar to the Elisabethquelle in Homburg and the Rakoczy in Kissingen, whereas our Ludwigsquelle is an

effervescent alkaline water and serves not only for medicinal purposes, but also as a table-water, in the same way as Selzer-water (for analysis of these springs see appendix). The two first-mentioned springs are situated near the drinking-hall, behind the Kursaal hotel and the Park hotel. The Ludwigsquelle lies about five minutes farther off on the road to Friedberg, but its waters can also be had, when desired, at the springs near the drinking-hall.

The waters of the three springs are taken according to medical prescription, each one by itself or mixed, as the physician may think best; they are taken at their own natural temperature or made still warmer, and from 1—3 glasses containing 5—8 ounces each; they are mostly taken in the morning while fasting. Many other kinds of mineral waters (Marienbad, Karlsbad, Schwalbach and others) are frequently prescribed by physicians, and are always to be had in a perfectly fresh condition in the drinking-hall.

Smoking is forbidden in the drinking-hall and the promenade near it during the morning whilst the mineral waters are being taken. Dogs are not allowed at either of the said places.

THE GENERAL EFFECT OF THE MINERAL WATERS.

The drinking of mineral waters is followed by several curative effects, I shall endeavour

to enumerate them in a few words. By prescribing a course of mineral waters we are enabled to stimulate the metabolism in several ways and to promote the absorption and excretion of exudata and other remains of diseases; moreover we can exercise a direct influence upon the stomach and bowels and by exciting the action of the intestines we can indirectly change the circulation in the abdominal organs as well as those in more remote parts of the body.

Mineral waters are frequently taken for kidney and bladder diseases. Finally, we are often enabled, by incorporation of the chemical ingredients of the waters, to promote the reformation of the entire constitution, as in cases of gout, and to produce a transformation of the blood, as for instance, with chlorosis and other forms of anaemia.

From these few observations it is not difficult for any one to perceive, that for a great number of complaints the drinking waters by themselves can be beneficial, but they are still more efficient when taken in connection with the baths.

A course of mineral waters demands constant medical supervision by an experienced physician, as is also the case with a course of baths, because these waters as well as all others are capable of doing irreparable injury, and I have not un-

[illegible] severe stomach and in-[illegible] their unrestricted [illegible]

[illegible] MEANS OF TREATMENT IN USE AT NAUHEIM

[illegible] Goats' whey [illegible] a Swiss dairyman [illegible] western wing of the drinking-[illegible] morning and evening [illegible] from cows that have been [illegible] surgeons. During the day [illegible] milk, Kefir and sterilized [illegible] Swiss [illegible] sale at a little cottage [illegible] the mountains.

[illegible] the eastern wing of the [illegible] Inhalation Hall, which is [illegible] the morning and [illegible] Sundays from 5—5 o'clock [illegible] means of a most perfect, [illegible] apparatus the well ventilated hall is [illegible] saline spray. Special con-[illegible] adjoining [illegible] the separate inhalation of different Nauheim mineral waters and other medicaments through the mouth and nose.

The Graduating House, or [illegible], near bathing house IV is also used for purposes of inhalation, and therefore provided with a covered

promenade and a number of seats. The air being impregnated with ozone and saline particles is remarkably beneficial in cases of catarrh of the respiratory organs, but it is also strengthening, refreshing and reviving for every one, especially on hot summer days. In this *Gradirhaus* the water is only put in action during the usual bathing hours (Sundays in the morning only), but every day without interruption in another larger house, lying more to the south and also provided with seats.

3) MASSAGE AND SWEDISH GYMNASTICS. These are applied in part manually, in which case thoroughly trained servants are employed, and partly mechanically, in the new Medico-Mechanic Institute, by means of very ingenuously constructed machines invented by Professor Zander of Stockholm. These machines execute all the passive and active movements and other exercises required by the Swedish Gymnastics with the greatest exactitude, thus enabling us to prescribe a precise amount of exercise, which it is absolutely impossible to do where manual force is applied. The institute is situated somewhat to the south of bathing-house IV.

It is directed by a tried gymnast of many years' standing, under the control of the physicians. The institute may be inspected at fixed times and it is indeed worth seeing.

4) TERRAINKUR (pedestrian exercises), for which purpose a number of paths, both level and of varying steepness, with corresponding finger-posts, have been provided. A map explanatory of the *Terrainkur* is to be had at the bookseller's shops.

THE DISEASES FOR WHICH BAD-NAUHEIM IS ADAPTED AND THEIR TREATMENT.

In Nauheim we see, as the great variety and wealth of its curing powers may lead us to suppose, a whole series of the most different diseases, for the treatment of which special methods have gradually been developed. These methods are to be considered as the result of purely scientific deliberations, aided by experience acquired in the course of time and by continued careful observation.

It is not my intention to discuss every kind of disease for which Nauheim is adapted or which comes under treatment here. I shall content myself with speaking about those which are especially represented and occur in greater numbers among the health-seekers that visit Nauheim.

I shall first consider a category of diseases that are most prevalent, and for the treatment of which Bad-Nauheim enjoys a long-tried and quite especial reputation. These are gout and the various kinds of rheumatic affections, which are so frequently confused and misunderstood by

those who are not of the medical profession, that I think it advisable to mention them in succession and, at the same time, to give a more detailed account of the symptoms and distinctive features, as they require in some respects a perfectly different kind of treatment.

THE GOUT.

This is a well-characterized disease, which in the beginning chiefly occurs in isolated acute attacks, commencing as a rule in the feet, (Podagra), and this with preference in the first joint of the big toe, then afterwards affecting other joints and finally leading to still further disorders. The attacks are exceedingly painful and usually take place in the middle of the night, having often been preceded for several days by indigestion, weariness in the legs, and general indisposition. The region round the joint affected is greatly swollen, the skin shiny, of a deep red colour and the least touch is often insupportable. Fever is almost invariably present. The isolated attack, — the fit, as it is called, — lasts, with diminution of pain by day and increase by night, for from 5—10 days.

After every attack, especially during the first years of the disease, a long period of good health succeeds, indeed, the sufferer often feels himself much better after the attack than be-

fore it. After some time however the fits return more frequently and last longer, but are not so painful. When the attack has passed away, the joint or joints affected continue to be somewhat red, the skin swollen, the flexibility lessened. Near the diseased part — sometimes even in other parts of the body — the so-called tophi (deposition of urates) appear, showing themselves mostly in the ankles and wrists, on the outer border of the ear and in the sinews of the toes, fingers and elbows. The gout has now become chronic. The general state of health is often lastingly disordered, indigestion is constantly present and certain complications (of the heart, kidneys etc.) begin to make themselves felt.

Regarding the character and nature of gout it has long been known to be a constitutional disease, generally assailing men, and either hereditary or acquired by a too luxurious course of living. While digesting the nourishment conveyed into the body, uric acid is formed in great quantities and in a state not easy to be dissolved. At the same time other acids are produced in abundance and the blood and other organic fluids are affected by them, thereby losing alkalescence. Thus a new factor in the difficulty of dissolving the uric acid is created, which is consequently retained in certain parts of the body and not discharged in sufficient quantities with the urine. I cannot here give a more detailed account of the

origin of so-called acute attacks of gout, of the nature of chronic gout and its complications. I will only point to the theory that acute attacks of gout are caused by the absorption and excretion of uratic deposits.

What has already been explained suffices for the understanding of the principles of treatment. The first thing to be considered is how to remove, as far as possible, the causes which aid the production of insoluble uric acid and its retention in the body, and then to do away with those troubles and complaints, that have already been produced by the disease.

To accomplish the first part of the treatment the patient's style of living must, above all, be regulated. The diet should be a so-called mixed one, containing no superfluity either of carbohydrates or of azotized food, but abundance of fresh vegetables and fruit. The taking of wine or beer is disadvantageous. If alcohol is necessary it is preferable to give brandy and such like liquors in water. It is not possible to give absolutely fixed regulations for all cases. We must be guided by the bodily condition of the patient, his digestion, his occupation and his habits. But the principal rules which must be observed are: to avoid disordering the digestion, which would cause the formation of acids, and to prevent the abnormal formation and accumulation of insoluble uric acid in the body.

For the same reason and in order to promote the expulsion of the uric acid much exercise in the open air is requisite.

Bathing and mineral waters likewise serve this end.

By drinking mineral waters many things can be effected: the promotion of the change of tissues, the improving of the digestion and the supplying of alkalies, especially of bicarbonate of soda, but also of potassium, calcium and lithium salts, in order to increase the alkalinity of the organic fluids and thereby their ability to dissolve the uric acid and to excrete it with the urine in the form of urates. Our Kurbrunnen, more or less diluted, answers these purposes perfectly by means of its great amount of chloride of lithium, chloride of potassium and bicarbonate of lime. Besides this the patient must drink the alkaline water of the Ludwigsbrunnen during the day, which has a very beneficial effect, on account of its containing bicarbonate of soda. I also prescribe, instead of the Kurbrunnen (of course according to circumstances) the Salzschlirf Bonifaciusbrunnen containing a great quantity of lithium, or our Karlsbrunnen with the addition of a little Karlsbad salt, and instead of our Ludwigsbrunnen the Fachingen mineral water or the Offenbach Kaiser-Friedrich-Quelle. Here however we must be guided by the reaction of the stomach on the different waters. It is advisable to prescribe an alkaline water also

to be taken at home for a long time without intermission. I know several gentlemen, who have for many years always drunk the water of our Ludwigsbrunnen at home, as it can, with its small amount of firm ingredients, be taken for a long time without any kind of molestation of the stomach or the digestion.

The object of the bathing should be to produce, by a powerful stimulation of the peripheric circulation and innervation, a change in the composition of the physical fluids. It has been proved a fact that with patients suffering from gout a decided effect on the solubility of the uric acid and its excretion with the urine has been produced by means of baths. It does not unfrequently occur, therefore, that during such a course an attack of gout comes on, but quickly passes away, an event that I do not consider at all undesirable, especially for those patients with whom the gout has already taken a chronic form. For these the baths have still a further purpose, namely, to relieve, or if possible to remove entirely, the complaints which the gout has left behind, *i. e.* swelling of the joints, stiffness etc. The course of baths usually begins with thermal brine baths having a temperature of 34—35° Cels. (93—95° Fahr.), gradually making way for the stronger and more stimulating kind of baths. The effervescent baths from Spring 12 are especially effective with their natural warmth of about

33° Cels. (92° Fahr.). When we require to promote the absorption of exudata and to remove the stiffness produced by it, the current thermal baths and current effervescent baths are often efficacious. Beneficial effects are frequently produced by warm showers being applied to the joints in question, as well as by massage and both active and passive gymnastic movements.

For the fresh form of gout, coming on in acute attacks, a course of 20—25 baths is mostly sufficient. By a gradual transition to cooler baths (down to about 28° Cels. = 82½° Fahr.), which at the end of the course are followed by frictions with cool water (down to about 18° Cels. = 65° Fahr.), we endeavour to strengthen the entire organism and make it more capable of resisting disease. In this manner, each separate case having of course a specially regulated course of treatment, I have obtained some really brilliant results. The fits either never returned at all, or only after very long intervals, and the remains of the exudata disappeared entirely.

Less brilliant, however, are the results in cases of chronic gout as regards entire recovery. But I have obtained very satisfactory issues in the improvement of swellings, stiffness and difficulty in moving certain joints and the revival of sinking physical strength. A longer course of baths with a slower procedure is of course necessary in this case, the more so, if at the same time the

internal organs are deranged, especially the heart; of this I shall have more to say later on. The baths with a very high temperature, 97—100° Fahr., which are recommended by some physicians and are customary in many watering-places, have often according to my experience a weakening effect — it is precisely against a treatment consuming physical power, that we have to guard such patients. For the same reason baths with too cool a temperature (under 91° Fahr.) are not recommendable, nor can they be borne, and every hardening attempt is therefore to be avoided.

We will now proceed to another disease which is likewise mistaken for gout by most people out of the medical profession.

ARTHRITIS DEFORMANS.

(DEFORMING INFLAMMATION OF THE JOINTS.)

This name indicates, it is true, a certain relation to gout and has its origin in the erroneous opinions of earlier times. At present physicians regard this disease as one that is to be strictly distinguished from gout, as it is caused by disordered nutrition in all the articular parts. This disordered nutrition is the result of chronic inflammation and creates an abnormal swelling of some parts and an atrophy of others, producing thereby a complete deformity (hence Arthritis

deformans). There is none of the so-called uric acid diathesis, as is the case with genuine gout, and, as a contrast to the latter, this disease occurs more frequently among women than among men. It usually attacks both halves of the body equally and often passes from the small peripheric joints — fingers, hands — to the larger ones — elbows, shoulders — more rarely beginning with the toes and passing to the knee etc., and appears to be in all probability caused by disordered innervation. Another form, occurring more among men in old age, called the "senile form", attacks the larger joints, especially those of the hips and vertebra, then the shoulders and knees and not both sides symmetrically.

The arthritis deformans begins with pains in the joints and the characteristic changes make their appearance very gradually; the heads of the bones become strikingly prominent, which is caused partly by swelling of the same and partly by atrophy of the surrounding fleshy parts. Little by little every movement of the limbs becomes more difficult, a crepitation is both heard and felt when moving them, distortions and contractions appear, the hand and fingers get into peculiar positions (the fingers lie one on top of the other, like the tiles of a roof, or they take the so-called "claw" form). At the climax of the disease the patients are almost unable to make the least kind of movement and have become quite helpless.

The cause of the breaking out of this disease is attributed to all kinds of pernicious influences, for instance: taking cold; a dull, damp dwelling; insufficient nourishment; overworking of body and mind and also fright, worry, grief, etc. I myself have not been able to become convinced of any particular cause and even in some rare cases, where the disease had exceptionally attacked young women in good circumstances, I searched in vain for the origin of the malady.

For this reason we have more difficulty in treating this disease than the gout. But nevertheless we occasionally succeed in stifling it in the germ, especially when in the "peripheric" form, or at least we stop its further progress. All internal remedies that have hitherto been tried have been abandoned, as they never had the effect desired. The drinking of mineral waters has had just as little success. Baths, on the contrary, are generally acknowledged as beneficial for this disease and patients are continually sent by their physicians to take a course every year.

According to my experience, that which does the most good to such patients are the thermal brine baths with a temperature of about 34° Cels. = 93° Fahr. and of longer duration than usual, that is to say, for half an hour.

After a great number of baths have been taken I have repeatedly seen an easier movement

acquired, then the pain disappeared and a suspension of the ever-advancing process of the disease took place. Very strong stimulating baths, such as effervescent baths and those of cooler temperature are, according to my experience, seldom advisable for the "peripheric" form and current effervescent baths should never be used. The latter however I frequently apply in cases of "senile" form and especially those of Spring 12, when the physical condition of the patient allows it. These patients often actually long for each coming current effervescent bath, so quickly do they feel the beneficial and relieving effect and so much does it improve their power of movement. Shower-baths, whether cold or warm, so far as it has been in my power to ascertain, have no effect at all on the diseased joints, or if any, rather an unfavourable one. Very weak brine-bandages sometimes operate favourably, but bandages with concentrated brine, like every other stronger irritant, are actually hurtful. I am much more in favour of a careful massage and it is in every case good to make the diseased limbs execute methodically the passive and active gymnastic movements, as by perfect rest the stiffness of the joints and the atrophy of the neighbouring parts are only increased, whereas by muscular exercises and the wearing away of the roughness on the heads of the bones, the power of using the limbs is augmented and they are prevented from becoming

totally stiff. Galvanisation, which has sometimes been applied with success along the vertebral column and on joints attacked, is only to be recommended after a course of baths has been taken.

CHRONIC MUSCULAR RHEUMATISM.

This disease is not as prevalent as is universally supposed. That which the patient usually takes for muscular rheumatism is the pain felt in the muscles and which often hinders him from making certain movements. But for physicians it is necessary to know the origin of the pain and they exclude all those cases where it lies outside the muscle-apparatus, or where the pain is caused by other illnesses, such as the affection of any single nerve (neuralgia, neuritis), certain diseases of the central nerve-system, chronic metal-intoxication, diabetes and trichinosis.

We must suppose, as nothing else can be proved, that muscular rheumatism is a locally confined disorder of the circulation in the muscles affected, which causes exudations between the bunches of muscular fibres, thereby producing irritation to the sensory intermuscular terminal nerves.

Muscular rheumatism is either permanent and of long duration — the chronic form in the strictest sense of the word — or it often recurs with longer or shorter intervals free from pain.

This malady is generally considered to be caused by catching cold, and it is certain that, when the parts of the body assailed by rheumatism are exposed to cold for a long time, the pain always increases. But other external causes can also occasion the appearance of the complaint, for instance, unusual over-exertion of single groups of muscles, or muscular distortion, which is often the case in that form of the disease, which is known under the name of LUMBAGO. Besides the form just mentioned, rheumatism of the shoulder occurs most frequently; this we must be careful not to confuse with diseases of the shoulder-joint. I have here noticed a very characteristic feature, namely, that the painful parts always feel colder than the surrounding ones, and that warmth eases the pain.

A sovereign remedy for this complaint and one that is preferable to all others is a course of baths, which has the aim of improving the circulation in the affected parts and of inuring the patient against cold.

I begin the course of baths for these patients, who are in other respects mostly strong healthy persons, with strong thermal brine baths of a rather high temperature (about 94° Fahr.) and soon proceed to effervescing brine baths, at the same time gradually reducing the temperature according to the diminution of pain, till I have reached a point in which I can recommend the patient to

begin a cold-water treatment, into the particulars of which I cannot enter more fully here.

Sometimes, especially in very old cases, it is necessary to prescribe, in addition to the general course of baths, a direct treatment of the painful parts, such as massage, electricity, shower-baths, etc.

Very rarely can the disease withstand this form of treatment and by continued inuring processes a relapse of the same is entirely prevented.

CHRONIC ARTICULAR RHEUMATISM.

This disease has its origin, in some cases, in rheumatic fever, but mostly makes its appearance independent of other maladies from the very beginning and is then, by patients, generally attributed to their having taken cold, whereas the physician in vain seeks the real cause, in the same manner as we have seen with the arthritis deformans. With this disease it sometimes has a certain resemblance, but yet substantially differs from it in that it does not usually appear symmetrically and is not found predominating with the female sex. Neither are the joints attacked in the same order of succession, as in cases of arthritis deformans; it mostly assails one or more of the larger joints of the upper or lower extremities (ankle, knee-joint or shoulder, elbow, wrist etc.). The joints attacked are almost always very sensitive, but from time to time they become

the seat of acute pain, which sometimes arises without any apparent cause, and at others is produced by pressure or movement of the parts affected; the pain then spreads beyond the joints into the fleshy parts. As in case of muscular rheumatism it becomes more violent while cold, whereas warmth has an soothing effect. The greatest pains occur when, after a long period of rest, any exertions are made, for instance, in the morning after getting up or on rising after sitting for a long time. It is then that the creaking in the joints, which so frequently occurs, is most strikingly audible. The joint is often scarcely swollen at all, at other times very much so. In severe cases deformities appear, as with arthritis deformans, with atrophy of the muscles and anchylosis (stiffnes of the joints), so that these patients become as helpless as the former. Then of course a combination of the two diseases is sometimes present.

In the treatment of this complaint baths have also from earliest times played a principal part. As in cases of muscular rheumatism so it is here the chief aim of the baths to improve the circulation in the parts affected. Strong baths exciting and reddening the skin are necessary for this purpose. Great warmth attains this end and therefore the hot thermal baths of Teplitz, Wiesbaden and other places are much visited by such patients. But in a great number of cases

the hot bath cannot be borne, and in others good effects appear momentarily, it is true, but they are of short duration. With our baths, given with a temperature of about 92° Fahr., no such sudden improvement occurs, because of their cool temperature, nay, in the beginning, the disease may even become worse. But the exciting effect of our baths is much more abiding, on account of the great quantity of salts and carbonic acid contained in them. The reports, that I afterwards receive on the result of a course of baths taken here, speak with the greatest satisfaction of the improvement that has set in shortly afterward and also continued uninterruptedly.

For many of these patients the thermal brine baths suffice; but for the most part it is necessary to proceed to stronger ones and even to use current effervescent baths, or else to add an abundance of mother-lye in order to obtain the desired effect. Also douches on the affected parts, massage of the same and frictions before or after the baths can do good service. I sometimes prescribe frictions to be made with irritating spirits on the diseased joints directly after the bath, for in this malady the strongest skin-irritants are not only well borne but also found to be effectual, whereas I have already shown that in arthritis deformans strong skin-excitants are often hurtful.

Now as regards the details of the usual method of treatment employed here, they are, by

slighter and fresh attacks, almost the same as in cases of chronic muscular rheumatism. These slighter cases, that is to say, the cases in which no important anatomic changes have taken place, are as a rule completely cured after a single course of baths. Even considerable swelling of the joints, with the products of inflammation deposited in and around them, disappear in a comparatively short time. But in every case, even where no traces of rheumatic pains, or only very slight ones, are left, it is advisable to repeat the course of baths the following year, as the illness returns but too easily and can only be entirely removed by repeated courses of baths.

The situation is very different on considering the severe cases, especially chronic ones, which usually come to us after they have tried other watering-places in vain. With these patients we are often only able to obtain a certain degree of betterment and to prevent further relapses of the disease. But yet I can look back with satisfaction on not a few cases in which a truly brilliant result was obtained by a consistent repetition of a long course of baths year after year.

The following instance may serve for instruction and will illustrate the details of the course of treatment to be applied.

Mr. N. N., 44 years old, first felt traces of rheumatic pains in his 32nd year; these appeared in his left shoulder and often disappeared after applying frictions, but always returned again. It was not until 8 years later, in the spring

of 1885, that pains sometimes made themselves felt in his right knee and in the autumn of the same year during several months in both his feet. A course of baths in Teplitz brought him rest for a year, then the old ills returned again and with them so much pain in his back, that he was obliged to take another course of baths; this time mud-baths were ordered to be taken in a watering-place near his home in Baltic-Russia. But during these baths the pains increased and gradually extended to all the larger joints. He passed the following winter in a pitiable condition, incapable of the least activity and often afflicted with the most violent pain.

On the 1st of May, 1889, he came here. He was suffering from pain in the neck, both shoulders, both knees and in the left heel, which he could very well bear while resting, but which on the least movement became unbearable. His neck was completely stiff, so that he could neither turn nor bow his head. It was not possible for him to raise his arms and he could only with difficulty walk a few steps with stiff knees which were considerably swollen. So he lay the greater part of the day in bed, as even riding in the bath chair caused him pain.

The course began with thermal brine baths from Spring 7 and 12, mixed in equal quantities, 35° Cels. warmth, duration 15 min. The patient who could only be lifted into the bath with great pain, felt very well in the bath and bore it so well that I only let him omit it every sixth or seventh day. Already in the fifth bath I could add mother-lye (2 litres, soon increasing to 5) and with the seventh the time increased to 30 min. After 8 baths I passed over to the effervescent brine baths from Spring 12, giving the first three with 34° of warmth and the later ones with their natural temperature of 32½—33° Cels., 20—30 min. duration; from the tenth effervescent brine bath onwards, they were strengthened with 2, 3, 4 and at last 5 litres of mother-lye. After 30 baths had been taken I

made a pause and had a massage applied very gently to the diseased parts. After a fortnight I began again with the baths, alternating one effervescent bath from Spring 12 with 5 litres of mother-lye and one current effervescent bath from Spring 12 lasting 30 min. At the same time massage, combined with passive gymnastics, was continued. In this way 20 more baths were taken, making a total of 50 baths.

On his departure the patient was able to move his arms, although not very freely, and could bend his knee-joint, which had lost all swelling; he could also turn and bow his head a little. Pain had entirely disappeared from the joints, his heel being the only part that still caused him suffering (rheumatic affections in the sinewy parts (tendons) of the sole of the foot I have always found to be exceedingly stubborn). The patient could walk short distances without any great exertion and for the last three weeks of his stay was not obliged to make use of his bath-chair. After a thirteen weeks' stay here, and quite happy about the result attained, he returned to his home with instructions to make use of frictions with spirits and to be very careful not to take cold in any way (dry, warm sitting and sleeping rooms, woollen underclothing, etc.), and to repeat the course of baths next year.

As early as the 20th of April of the following year, 1890, he returned again, this time alone, whereas the year before, being perfectly helpless, his wife had accompanied him. The improvement begun by the course of baths had been progressing while at home. He now only complained of a little stiffness in his shoulders, more especially in the cervical vertebra, and was therefore still unable to move his head at will.

This time his course of baths consisted of 35 effervescent brine baths of Spring 12, with their natural warmth. The result was the entire removal of what remained of his illness.

Next summer he had the intention of coming again as a precautionary measure, but was prevented by external circumstances. Yet he continues well to the present day.*)

For this kind of patients it is not advisable to reduce the temperature of the baths too much. Attempts to inure them by a cold-water treatment against the influence of cold are only admissible when no traces of rheumatism have appeared for a long time.

RHEUMATIC FEVER, ITS REMAINS AND AFTER-EFFECTS.

This disease arises in all probability from infection, which does not mean, as many non-medical people believe, that it is infectious, but only that it is caused by the invasion of microbes into the human body. This supposition is authorised by the whole appearance of the disease, even though medical men have not yet succeeded in discovering the microbe in question. We must, moreover, suppose a certain predisposition to this complaint in the patient before it makes its appearance.

The malady usually sets in abruptly without any warning whatever, sometimes immediatly after

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*) Another case is to be found in the chapter: "Diseases of the Heart".

an inflammation of the throat.*) Their is always more or less high fever and a very painful swelling of some one of the joints, which become red and hot.

In contrast to the other diseases already described, this form has the peculiarity that the articular affection passes quickly from one joint to another and that all the joints can be attacked one after the other, or simultaneously.

The treatment and cure of acute articular rheumatism has now become, by means of different medicaments, much better and speedier than it was about thirty years ago. But notwithstanding this disease is, in many cases, exceedingly obdurate and medicines alone are not sufficient to make it disappear entirely. Swellings and painfullness in some of the joints accompanied by moderate fever occur over and over again, sometimes lasting for months, till the physician resolves to send the patient to a watering-place. In other cases after an attack of articular rheumatism has been passed through it leaves behind it what we have already described as chronic articular rheumatism, or sometimes the swelling of a joint does not yield and developes itself into a chronic inflammation

*) My experiences in this respect I published in the *Deutsche medicinische Wochenschrift*, 1896, No. 17, in an article entitled: *Ueber acuten Gelenkrheumatismus im Anschluss an Angina* (Rheumatic Fever in connection with Inflammation of the Throat).

of the joint. Sometimes again it is only a certain weakness and stiffness in the joints attacked, or pains that recur after continued exertions, which induces the physician to send the patients here. Often it is only the desire to remove, by means of a course of baths, the disposition to further attacks of rheumatic fever. In all these cases we see the best results obtained here. Frequently, it is true, a fresh acute attack occurs during the taking of the baths, but this, as we have already said of the gout, does not signify and passes away rapidly. It is advisable, especially when the acute stage has not long been passed, to begin with warm baths ($33^1/_2$—34^0 Cels. = 92—93^0 Fahr.) and gradually descend to the natural temperature of our springs or still lower. Brine-bandages, massage, douches, etc. can be used with advantage combined with the bath-treatment; usually, however, they are not necessary.

It may perhaps be of especial interest to quote a few instances of severe illness, which were cured exclusively by means of baths.

Mr. X., 31 years old, came under my treatment on the 14th of June, 1882, after having been laid up for nearly 3 months with rheumatic fever, combined with inflammation of the pericardium, which was by this time cured. He had already had rheumatic fever twice before, in 1877 and 1831. On his arrival, having been three weeks out of bed, he shows the following remains of his disease: both wrists are still stiff and almost immovable; most of the knuckles still rather swollen and likewise stiff, so that the hands cannot be closed. The legs have been left exceedingly weak, more

easily to be observed while standing, than while walking. He cannot walk more than a hundred steps consecutively, so that he is obliged to make use of the bath-chair, even for the little distance between his house and the bathing-establishment. The heart is easily excitable, but otherwise normal.

Treatment: Thermal brine baths from Spring 7 and 12 in equal parts, temperature 35° Cels., time 10 minutes, third day pause. The temperature is gradually reduced to 32°, the time prolonged to 20 minutes and every fourth day omitted. After 16 baths I proceeded to effervescent baths from Spring 7, natural temperature (30½° Cels.), beginning with a duration of 10 minutes on account of the still rather rapid action of the heart, but, as the baths did the patient good, they were soon increased to 20 minutes. After the 6th effervescent brine bath a further reduction of temperature took place and that, gradually down to 29° Cels.

From the 14th day an improvement in the general condition began to appear and went on without interruption from day to day. After 30 baths the gentleman departed. He could now take a walk of an hour and was able to close his hands, which however had not get recovered their power. The action of the heart was entirely normal. During the last week of his stay here, I had ordered him ablutions with 25° Cels. every morning after rising, and advised him to continue the same at home, gradually lowering the temperature to 20° Cels. Since that time the patient has kept well, notwithstanding that the course of baths has not been repeated.

Mr. N. N., 34 years old, had rheumatic fever 5 years before. In 1880 he was attacked again by the disease and that in a very violent manner, not yielding to any of the medicaments employed. Three days before he arrived here he was lying in bed. I saw him for the first

time on the 6th of July. He was feeling very little pain, but was weak and stiff in the knees and hands.

Treatment: Thermal brine baths from Spring 7, 33½° warm, time 10 min., third day omitted, then 15 min. After four baths he was suddenly attacked by pain of such great violence with swelling of the hands, knees and knuckles, that I was obliged to give him salicylate of soda. Although the temperature of his body was always more than normal in the morning (generally about 101° Fahr.), I still let him continue his baths. He only took thermal brine baths, in all 32, and mostly from Spring 7 alone, as every increase in the strength of the baths, tried him too much. Neither could he bear a cooler temperature and I could lower them only to 32°. After about the twentieth bath he remained free from pain and the final result of the course of baths was a complete recovery.

Next year a repetition of the course of baths took place, although the patient felt nothing more of the rheumatism. He took in 3 weeks 18 thermal brine baths strengthened with mother-lye, duration from 20—30 minutes, warmth 32°, without this time feeling any evil effect. Since that time — 15 years have now passed — the patient has never had a recurrence of the complaint.

I could quote dozens more of similarly successful cases and also, it is true, many cases in which the result was neither so complete nor so speedy. In some instances it was only after repeating the course of baths for several years in succession that full strength and health was acquired and danger of relapses entirely removed.

I must here repeat what I have already said about chronic articular rheumatism, namely, the necessity of repeating the course of baths for

several years. In this disease in particular the danger of considering one's self entirely recovered and free from disposition to renewed attacks is very great, when one or even several years have passed without a single attack. But there is no disease that returns so easily as this. Therefore it is absolutely necessary, no matter whether a fresh attack has occurred after one course of baths or not, to repeat the treatment, not once but several times, if the patient wishes to be certain of a complete recovery and a perfect removal of all disposition to this disease. Unfortunately cases have come to my notice only too often, in which my advice on this point has not been followed, because the patient had no more suffering to complain of; after one or two winters of health the old malady returned and usually in an aggravated form. Exceptions there are, of course, and I have intentionally described such a case, in which a patient recovered and remained healthy after one course of baths. But by these exceptions we must not be guided.

DISEASES OF THE HEART. — DISORDERED CIRCULATION.

Acute articular rheumatism is very often combined with endocarditis (*i.e.* inflammation of the internal cardiac membranes). In the great majority of cases this results in a damaged

heart, which is caused by the curling or shrinking of some cardiac valve or infiltrations and thickening of the same, also frequently by the narrowing of the heart's orifices. Physicians never ventured to send such patients to bathing-places formerly, as it was feared that the baths would excite the action of the heart and thereby unfavourably influence the existing disease. Also in the earlier works on Nauheim we find the same view represented. Yet as early as the year 1859 appears a contrary opinion expressed in Prof. Beneke's*) first work upon Nauheim, and another still more decided statement in his second work published in 1861. Among those patients suffering from rheumatism, who came under his treatment in Nauheim there were eight cases of organic heart disease, and he found that they were able to bear the thermal brine baths very well and without any irritation or symptoms of congestion appearing, and that taking the baths was not only beneficial to their rheumatism, but to a certain degree, profitable to their cardiac malady.

In 1870 Beneke wrote a larger work, in which he explained his views more fully and it was only after this that patients with heart-disease, more especially in conjunction with rheu-

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*) From 1857 till his death in 1883 he was physician in Nauheim and from 1866 at the same time Professor at the neighbouring University of Marburg.

matism, came to Nauheim in great numbers. In a monograph which appeared in 1872 Beneke recorded 101 cases and he gave a detailed account of 55 of them. In 1875 he published another article on the same subject in a Berlin medical journal. If we examine all these works we find that Beneke draws attention to four main points in the Nauheim treatment of heart-disease: firstly, the removal of rheumatic tendencies, whereby relapses of acute rheumatism, which would increase an existing cardiac lesion, are prevented; secondly, the effect of these baths being to promote absorption, he believes that, as they cure other productions of rheumatic inflammation, so they will also be beneficial to the cardiac valvular apparatus; thirdly, he found that the baths always had a soothing effect upon the heart's action, even where there was no rheumatism; and consequently, fourthly, he very often found, in old valvular diseases, a striking improvement in compensation (complete recuperation of enfeebled heart-action), as well as a considerable amelioration in the general state of health, which can doubtless also be obtained without a treatment of thermal baths, but which they have attained in cases, where no other treatment had been able to do so.

Beneke has thus the indisputable merit of having introduced a new kind of treatment into the therapeutics of chronic heart-disease by first showing that patients suffering from a cardiac

malady can not only support a treatment of baths, but also improve their health by taking them.

Thus the task of all other works that have since been written on this subject has been to give a fuller explanation, based upon more profound scientific examinations and a continued observation of yearly increasing numbers of patients, of the peculiar favourable effect, which our baths have upon cardiac diseases; also to improve the treatment and, through greater experience, to specify the indications.

In an article of mine, which appeared in 1878 in a Berlin medical journal I have described a very marked case and shown how, under certain circumstances, the thermal brine baths containing carbonic acid have the same effect as digitalis on the heart.

This was the first occasion in which it was reported that *the baths increase the energy of the heart's action* and therefore it was afterwards stated, that *this bathing was a first-class tonic for heart-diseases.*

This was followed by other papers by the late Augustus Schott and by myself, which partly brougth to light new facts about the effect of our baths upon the circulation of the blood and partly confirmed by many observations what was already known. Thus the assertions made by Beneke that the baths always lessened the frequency of the pulse, and that the decrease lasted

for some time after the baths had been taken, were proved to be correct. At the same time we observed that the blood-pressure as well as the power of respiration were increased by the baths. I have likewise often detected by means of percussion a marked diminution of the dilatation during the treatment, and also an increase of the vital capacity of the lungs together with a disappearance of bronchitis, oedema, swelling of the liver, albuminuria dependent on congested kidneys, in short, of all those symptoms which arise from incompetence of the cardiac muscle.

Again we have the question whether the bath-treatment be suitable in all cases. From the beginning it soon became evident that a separation of the different kinds of disordered circulation was impossible. Although Beneke formerly believed, as I did myself, that arterio-sclerosis (hardening of arteries) must be excluded from the treatment, for theoretic reasons, yet I can now state that the baths are also beneficial in such cases. In the course of years I have treated a large number of patients suffering from advanced arterio-sclerosis, without ever having had an accident to lament; on the contrary, the usual effect was a considerable improvement of the circulation and general state of health (in some cases, combined with aortic aneurism), as I fully explained in a lecture delivered at the Balneological Congress in Berlin, 1895, and in a

paper, published in The Lancet, April 17th, 1897. *(Baths and Gymnastics in Arterio-sclerosis).* In the latter paper I also explained — in opposition to observations published in earlier works by myself and others — that it is possible to regulate the baths so, as to avoid increasing the blood-pressure, which is very important when treating cases of arterio-sclerosis by baths.

If we now consider all that has been definitely ascertained concerning the effect of our baths we shall find that the carbonic acid thermal brine baths tend to soothe and regulate the heart's action, improving its innervation and increasing its muscular tone. A strictly physiological explanation of this effect is not possible, as it is indeed difficult to give a perfectly non-hypothetical explanation of the effect of any other bath-treatment. It is supposed that, by stimulating the peripheral circulation, a certain influence on the cardiac action is obtained and that, at the beginning of the bath and as long as the impulse of the cold lasts, an increase of the intra-cardiac pressure is procured by the contraction of the cutaneous vessels with an incentive to increased activity of the cardiac muscle. This is soon followed by relief of the internal organs, and especially of the heart, through the dilatation and filling with blood of the cutaneous vessels caused by the carbonic acid, in spite of the cool temperature of the bath. If the contraction of the cutaneous vessels lasts too

long, as is the case with the ordinary cold baths, over-exertion of the heart takes place. By this peculiar quality of the carbonic acid just mentioned of increasing the circulation of the blood in the skin, so that it becomes red all over, the bather feels a greater degree of warmth, than in an ordinary cool bath and that without any unpleasant feeling. The baths are also graduated to suit each individual case and are at first prescribed with a temperature little lower than the normal heat of the body and with such a small quantity of carbonic acid that it can only have a very slight effect on the heart and vessels. If the irritation of the cold has too great an effect, lasts too long, or is not counterbalanced by the carbonic acid (as shown by cyanosis, shortness of breath or continued shivering), then the temperature of the bath must be raised and the amount of carbonic acid increased afterwards. When the patient can bear the carbonic acid well, the temperature is then again cautiously lowered and, if necessary, only after he has been in the bath for some time. (In most cases we only reduce the temperature $^1/_2{}^0$ Cels. from one bath to the other.)

It has not yet been ascertained, whether the chemical, thermic and mechanical irritation of the cutaneous nervous system by the bath has not a direct effect by reflexion or continuation on the greater vessels and the heart, in the same way as we can perceive at the peripheric vessels.

But, although it is impossible to prove this mathematically, we must be content to accept it for the following reasons; first, considering the well-known attempts made with other skin-irritants and their effect on the circulation; and secondly, by reason of the above-mentioned influence of the baths upon blood-pressure, respiration, etc., which are not to be sufficiently explained by the proceedings in the peripheric vessels alone. The incontestable success, which our baths have on the heart's function and the entire circulation is only to be explained if we believe in a direct action by way of the end-organs of the cutaneous nerves on the central vascular and cardiac nervous system, both trophic and motoric.

To produce improved nutrition and invigoration of the cardiac muscle it is necessary to stimulate the heart to more powerful action, not continuously, but so as to alternate rest and relief with exercise in a manner suitable to each individual case. As has been seen from the above explanations, our baths answer this purpose perfectly and therefore it is not necessary to give fuller particulars as to how the cardiac muscle is at length revived and invigorated by the effects of a continued course of baths. In addition to this, the influence of the baths in promoting transformation of tissues is, when properly used, not only beneficial to the entire organism, but also to any single suffering organ.

Such are the different factors, which combine to produce the favourable result so often seen in the Nauheim treatment. It is therefore evident that *the Nauheim baths are adapted to all kinds of disordered circulation of the blood requiring an invigoration of the cardiac action*; *it is quite immaterial whether the illness arise from valvular defects, or is the result of a diseased cardiac muscle, of atheromatous degeneration of the vessels, or even of a generally abnormal nourishment, such as obesity.*

Great success has also been obtained in illnesses resulting from *irregular innervation of the heart*, more especially in cases of *nervous palpitation*)*. This should be chiefly attributed to the well-known beneficial influence of the Nauheim baths upon all diseases of the nervous system, either organic or functional, and which induces us to suppose that the baths have also a tonic effect on the cardiac and vascular nervous systems.

The good result I see brought about by the bath-treatment every year in cases of *Graves' disease* is due more to the favourable action of the baths upon the embolism and its pathological changes caused by a diseased organ (in this case the thyroid gland), than to the influence of the baths on the heart and its nerves.

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*) In a lecture about nervous troubles of the heart given in Berlin, 1890, I have explained this matter in detail.

I will now give a short description of the method of treatment. I begin with baths containing only a slight quantity of carbonic acid and salt, having a temperature of 90—92° Fahr. and lasting 5—10 min., according to the reaction produced. As time goes on the carbonic acid and salt are increased and the temperature reduced (sometimes as low as 83° and even lower), the time increased to 15—20 min. At the beginning there is a pause every third or fourth day, but later on at longer intervals.

I often make the patient begin with half-baths, especially in cases of angina pectoris and aortic aneurism. The patients must be warned against taking a chill after the bath, as that would produce a contraction of the cutaneous vessels with shivering and oppression of the heart. Most of the patients are ordered 1—2 hours' repose in bed after the bath, and it is only in some exceptional cases that I make them take a walk for ¼—½ an hour before resting.

I have only been able to give a general sketch of our method. It is a matter of course that it must be modified for each special case. In prescribing the bath-treatment it must always be kept well in mind that a proper proportion of rest and exercise must be given to the heart, and, although at the beginning the former predominates, yet later on the latter plays the chief part in the treatment.

That such baths, as we have just described, are only to be found in Nauheim, nobody would for a moment maintain, nor has it ever been maintained by physicians of Nauheim. On the contrary, it is just from Nauheim that attention has been called to the fact, that artificial imitations of our baths can also benefit heart-diseases. Yet they are far from being so effective as the natural Nauheim baths, from which they differ considerably in many respects, even if we do not take into account the running effervescent baths, or *Sprudelstrombäder*, which cannot be artificially prepared and are not to be found in any other bathing-place of the world.

If in spite of all that has been said, Nauheim is often spoken of as a special watering-place for those suffering from heart-diseases, it does not mean, that these baths alone are beneficial for such patients, but rather that Nauheim is adapted, more than any other watering-place, for such diseases, and that for the following reasons:

First, because in Nauheim we can graduate the baths most accuratly in every respect, through the natural means at our disposal, and if necessary we can raise the stimulating effect to a height that is not attainable elsewhere; secondly, because the bathing-treatment, which was formerly limited to weak-carbonated baths and then only applied to a certain number of those patients suffering

from heart-disease, has now been brought to such a state of perfection and exactness, as is to be found in no other place, and the baths are now adapted to all kinds of diseases of the circulatory system.

Furthermore some of the physicians here have become extremely expert in the treatment of heart-diseases, not only as regards the bath-treatment, but also as to the application of all other known remedies.

I now come to another chapter on this subject, viz., the other kinds of treatment generally in use for disordered circulation in addition to the bath-treatment.

It would be a false conception of what is required from a watering-place treatment if we were to confine ourselves simply to the prescription of baths. There can be no doubt that the effect of the baths in a watering-place is in a great measure influenced by the climatic conditions, a continued stay in pure strengthening air, freedom from all household-cares and the avoidance of all excitement; it is also quite certain that a great number of those favourable results, which are found at Nauheim — in contrast to those from artificial baths taken at home — is to be attributed to these circumstances. But another and still greater advantage of a watering-place, and one that is of great service to the physicians is, that in such places the patients are a great deal

readier to follow injunctions as to their whole way of living, and more especially directions for their diet.

Particular attention is paid to dietetics in Nauheim, and here again we are assisted by an unusually wide experience. Yet it is not possible to give any general statement on this subject, not even for single groups of patients, as I am always led, when prescribing their diet, by the special circumstances of each individual case, both as regards the choice of food and the use of alcoholic stimulants, etc. Into one subject, however, I should like to enter a little more fully. It is well-known that fifteen years ago the late Prof. Oertel recommended restriction in the enjoyment of fluids in cases of disordered circulation whether due to obesity or any other cause. Shortly after the publication of Oertel's book, and supported by observations made during many years, I gave it as my opinion in a lecture*) that "a liberal use of liquids easily does harm to patients with heart-diseases and a reduction of them often does good, yet this principle is not to be carried too far". I am of the same opinion to the present day and for this purpose from many of my patients I have an exact daily report of the quantity of fluid taken and also the quantity cast off; from

*) Groedel: "Results of observations made while treating disordered circulation according to Prof. Oertel's method". *Deutsche Medic. Zeitung.* 1886. No. 35.

this I regulate, to a certain extent, my injunctions for the use of food and trink, as well as my other therapeutic instructions. I have now long restricted the use of a drinking-cure, which was so often recommended by Beneke. The mineral water frequently fails to produce the desired draining of the intestines and then, being rapidly absorbed, causes a sudden overfilling and overcharging of the vascular system, thus imposing injurious extra work on the muscular and nervous circulatory organs.

It will not be out of place to give here a short account of the so - called "Terrainkur" (pedestrian exercises), which is recommended in the above-mentioned book of Oertel. But I must first return to an earlier period and refer to the introduction of "gymnastics" as an auxiliary means in our bath-treatment. For many years gymnastics had been employed by physicians in Sweden for all complaints of the circulatory system and it was thought advisable to introduce this method into Nauheim for the same illnesses.

Gymnastics are divided, as is well-known, into "active", "passive" and "resisting" gymnastics. It is the last of these that plays the principal part in the treatment of heart-diseases. The gymnastic exercise is performed either by means of machines — as, for instance, those invented by Prof. Zander of Stockholm — or else manually by persons especially trained for the

purpose. The principle and aim of this gymnastic exercise is to stimulate the circulation in the muscles brought into action, whereby the cardiac muscle is reflexly induced to stronger and more abundant contractions, with a simultaneous relieving of the venous, and acceleration of the arterial and lymphatic portions of the circulation. I cannot enter more fully into a description of the finer physiological effects which result from this exercise, and their influence on the working of the heart; suffice it to say that passive gymnastics produce rather an alleviation of the heart, relief of the cardiac action, whereas active and more especially resisting gymnastics give an impulse to increased activity and to the development of the reserve forces of the heart, quite analogous to the bath-treatment, by which the first non-irritating warmer baths have chiefly the task of relieving the heart, and the subsequent stronger baths are intended to stimulate and increase its working power. If these gymnastics are exercised with an exact regard to the existing relations, so that all over-exertion or fatiguing of the cardiac muscle is avoided, a very favourable result is often obtained, especially when combined with the bathing-treatment and a suitable regime. At first I only allow the patients to make movements with the upper extremities, afterwards proceeding to the lower extremities and the trunk. All such movements as prevent free motion of the diaphragm or the

wall of the thorax are to be avoided with sedulous care. Especial pains should be taken that the patient does not make the exercises by jerks, but rather slowly and continuously, at the same time neither holding nor forcing his breathing. If the patient should find any difficulty in doing so, he may be instructed to count slowly in order to avoid automatic reflex fixation of the diaphragm and the thorax. The exercise may not be made on a full stomach, and there should be frequent pauses to let the heart, which becomes somewhat agitated, calm down again. Whereas formerly exclusively manual gymnastics were in use in Nauheim, we are now able to employ mechanical exercise, as a large institute supplied with all the Zander machines has been established here, and from the experience I have had I often decidedly prefer the mechanical gymnastics to the manual. We can better control the amount of exercise, and are much more certain that it will be carried out with the proper kind of respiration, with regularity and avoidance of jerking movements, etc. Still there are always many cases for which manual gymnastics are alone appliable, or at least to be preferred. That is especially with those persons, who may only do a little exercise at one time, several times daily, and with a limited amount of movements. In an appendix to Dr. Alexander Morison's book "On Cardiac Failure and its Treatment", (London, 1897), I pointed out the peculiarities of both

methods in a detailed manner, and showed in which cases the one is to be preferred and in which the other. Every body that reads the explanations given there will agree with my opinion, based upon an extensive experience, *i.e.* that each of the two kinds of gymnastics has its special advantages and that they are complementary to each other. It is wrong therefore to apply and recommend only one of these methods, as is done by some physicians, owing to a certain prejudice. That both kinds of gymnastics must be performed under careful medical superintendence is a matter of course.

The success of the *Terrainkur* is based chiefly on the same principles at that of the gymnastics, yet there are also other factors that go to explain the beneficial effect, among which I attribute by far the greatest importance to the influence on the respiration, and so I frequently prescribe "pulmonary gymnastics" alone, as having a very advantageous effect on heart-disease.

Hill-climbing, which was made known to us as a remedy by Stokes and which, under certain circumstances, may strengthen a weak heart, was frequently prescribed by me before the publication of Oertel's work; though more frequently, it is true, after Oertel had explained the matter more methodically. I have, however, pointed out in the above-mentioned lecture the perils of a universal application, and what I said

at that time (1886) is now generally acknowledged, namely, that Oertel's "out-door exercise" or "climbing-treatment" could only be recommended in cases of diminished cardiac power resulting from general obesity, of insufficiency of the cardiac muscle in patients with slight anaemia and a general flaccidity of the muscles, or of curvature of the spine causing circulatory disturbances in the lungs; but it can only be used in a few cases of chronic valvular disease, more especially if it be mitral insufficiency, when the disordered compensation is still in its first stages, or when, by previous courses of bathing, an almost sufficient compensation has been attained. Therefore pedestrian exercise is suited to only a small portion of those patients with disordered circulation, who come to Nauheim for treatment. Gymnastics are mostly to be preferred to Oertel's *Terrainkur* because they do not exert the heart so much, can be better regulated, and are often admissible in cases in which the *Terrainkur* would be absolutely impracticable. I here refer more particularly to walking up-hill, for walking on level roads can be borne by every patient with heart-disease, if it is done at a slow pace, with frequent rests and regular breathing, with the avoidance of all talking during the walk and if every now and then a deep breath be taken; of course the length of the walk must be properly proportioned to the patient's power of endurance. Yet there

are always, among the patients sent to Nauheim, a number for whom at first the only thing that can eventually lead to a good result, is the avoidance of every kind of bodily exertion, and therefore I often recommend the use of the bath-chair.

I have still to mention the "massage", which — usually applied in the form of a general massage — has likewise the effect of removing venous stagnation and stimulating the action of the heart, by increasing the circulation in the skin and peripheral muscles. It is often used as an aid to the bath-treatment in conjunction with gymnastics, and often also as a substitute for the latter, in those not too rare cases in which gymnastics cannot be borne, such as arterio-sclerosis, most cases of aortic incompetence, or advanced fatty degeneration of the cardiac muscle, etc.

I should not omit to state that in many cases medicinal treatment is not to be dispensed with, but I must also add that I could quote many instances in which drug-treatment had been exhaustively tried at home, with a conspicuous absence of beneficial result, whereas the same drugs in connection with a course of baths had acted in a most striking manner. Yet this does not alter what I have said in another place about the contra-indications for Nauheim, namely, that it is not advisable to send patients here for a bathing-treatment, on whom medicaments, more especially digitalis, produce no reaction whatever.

As regards the success which one may hope to secure by a course of bathing, we are in some cases very glad to have obtained a temporary improvement, even if it only last for a few months. Yet by far the greater number of our patients, and especially those who repeat the course of baths regularly, succeed in establishing a relatively good state of health lasting for a number of years.

For the better illustration of what has just been said, but more especially that I may explain in a clearer manner the course of treatment, I will now give a short account of some characteristic cases.

The first is the case of a young man with combined valvular lesion (aortic and mitral incompetence and mitral constriction), resulting from rheumatic fever, who succeeded in obtaining a complete compensation of the greatly disordered circulation by means of a repeated bathing-treatment.

N. N., 16 years, had gone through a violent attack of acute rheumatism combined with severe endocarditis, in the year 1883 and twice since then; the last of these was a year ago, when he was obliged to keep his bed for four months. He arrived here on the June 10th, 1886, was very anaemish and also exceedingly backward for his age; he suffered so much from shortness of breath that he could only walk a few steps without being obliged to stand still; he had frequent palpitations of the heart, very disturbed sleep, in which he often moaned, and felt altogether very wretched.

Heart: Unusual enlargement to the right and left; (the cardiac dulness extends from the right nipple to near the left axillary line); the whole wall of the chest is kept continually heaving by the action of the heart; the left breast is distinctly thrust forward; at the apex two loud murmurs, at the aorta a diastolic bruit of almost musical character, the pulmonary arterial second sound greatly accentuated; heart-action very quick, 140 a minute, yet regular with the exception of few intermissions.

He had not been able to do without digitalis for a long time and was obliged to continue it to begin with. I ordered him to pass the greater part of the day in the open air in his bath-chair, to walk about his room as little as possible, and to avoid dressing without assistance.

The baths were at first taken only as half-baths, every other day; after the second week a pause was made every third day; the baths commenced with a duration of 5 min., which was gradually increased to 10 min. The temperature of the baths remained during the whole course 32½—33° Cels.; the amount of salt 1½—2 per cent with a small quantity of carbonic acid (Spring 7 mixed with ⅓ of fresh water, and then Spring 7 alone).

At the end of a fortnight he ceased to take digitalis and more walking was allowed; he continued to improve from day to day with a corresponding decrease of dyspnoea. After a six weeks' stay with 24 baths he returned home considerably better. The pulse had fallen to about 100 a minute, the state of the heart otherwise about the same as on arrival. — On the May 28th, 1887, I saw him again. He was looking much better and had had no more articular rheumatism; his heart only oppressed him when taking bodily exercise. The cardiac dulness had decidedly decreased, the bruits were unchanged. The action of the heart was quieter, though still lifting the whole wall of the chest. Pulse 90—100. He could take walks of about a quarter of an hour without being obliged to stop.

This time the baths were taken stronger, at first lasting 8 min. and gradually being increased to 15 min.; a pause at first every third day and then every fourth day. The thermal baths from Spring 7 were soon exchanged for stronger baths (Spring 7 and 12 mixed and then Spring 12 alone), and finally for the effervescent baths from Spring 7 and a corresponding gradual decrease of warmth from 32½° to 30½°. During the whole time he took 28 baths and had "pulmonary gymnastics" twice daily for 5—10—15 min. with suitable pauses.

In six weeks' time he gained 9 pounds in weight and could walk on level country for half an hour without fatigue or want of breath. The dilatation of the heart had decreased still more; the murmur at the aorta lost its musical sound.

He then entered his father's business and was able to work uninterruptedly until his return on the May 27th, 1888. He had then no complaint at all and even when he walked rather quickly he had no more palpitations. The murmur above the aorta had become very faint; those at the apex were unchanged. The arching of the thorax had diminished; the cardiac dulness reached from only 1 ctm. outside the right margin of the sternum to the left nipple-line. The apex-beat heaved strongly in the mammillary line, in the fifth and sixth interspaces. Pulse 90.

This time the course of 25 baths consisted chiefly of effervescent baths made still stronger by means of mother-lye. The temperature was quickly reduced from 32½°—30° and the time increased from 10—15 min., with a pause every four days. I made him practice at the same time "resistance gymnastics" so as to give his heart greater power of endurance. This course of baths again did him a great deal of good, as did also the fourth and last course in the year 1889, combined with the *terrainkur*. The pulse was then only 72 a min.; the aortic murmur scarcely audible. Limits of the cardiac dulness as the year before;

heart-impulse not heaving much; general state of health very satisfactory; had absolutely no suffering whatever, so that it could be considered a complete compensation. Since that time I have never seen him again, but I have repeatedly heard of the excellent state of his health. He has now been employed for several years in a business in England. He has remained perfectly free from articular rheumatism since his first stay at Nauheim.

The following case treats of simple valvular lesion (mitral insufficiency) following acute rheumatism, a complete compensation of which was obtained by one course of baths, so that even a second attack of rheumatic fever, which occurred some years later, passed off without having any effect on the heart. It was only 12 years afterwards that, from outside causes, the compensation was again disturbed, but it was again fully restored by one course of baths.

Mr. N. N., 45 years, comes for the first time under my treatment in 1877. Has repeatedly had acute articular rheumatism and an attack of the preceding year has left him an insufficiency of the mitral valve, with slight hypertrophy. He has often violent palpitation of the heart without any particular cause and shortness of breath after the least exertion. Course of 25 thermal brine baths with a moderate quantity of carbonic acid, 1½—3 per cent salt, 33—31°, 10—15 min. duration, after which all complaints, even the rheumatism, disappeared and perfect health was restored, until a fresh attack of acute articular rheumatism in the spring of 1883, which passed away without affecting the heart. A course of 10 thermal baths and 14 effervescent baths, 32½° warmth, 10—15—20 min. duration, removes the rest of his artic. rheum. The systolic murmur at the apex is very faintly audible, perfectly compensated, without

considerable hypertrophy. He now remained well until 1889. Through business-anxieties and a not very prudent way of living, the compensation was again disturbed. He again complained of violent palpitations, together with difficulty in breathing, heaviness of the head, disturbed sleep, etc. The old murmur was louder, greater dilatation to the right and left. Heart-action irregular, 90—100 a min. A four weeks' treatment (half thermal and half effervescent baths, 32½—30½° warmth, 10—15 min. duration, about 2—3 per cent of salt) relieved him of all his complaints. The cardiac action was again normal. Dilatation again decreased. The next year the treatment was repeated as a precaution. State of heart the same as at the end of preceding year. This time the course of 19 effervescent baths and 4 current effervescent baths, 30½° warmth, is combined with the *terrainkur*. He leaves Nauheim extremely well and has remained in good health ever since.

The next case gives us an example of pure dilatation and weakness of the heart caused by over-exertion.

N. N., officer in the army, 30 years, after an unusually fast and exhausting ride suddenly felt a heavy pressure on his chest and at the same time a general weakness. The pressure on the chest, with shortness of breath, remains permanent. An acute dilatation of the heart was discovered, absolute rest and digitalis being prescribed, after which an improvement took place. On reentering service, however, he observed that, with the least exertion, the pressure always returned. He was also troubled with irregular action of the heart.

Examined on July 5th, 1884: Heart enlarged on the left nearly to the nipple-line, only little on the right; sounds faintly audible, the second sound everywhere reduplicated. Pulse very changeable from 70 to about 100 a min., sometimes intermittent.

Treatment: Thermal brine baths from Spring 7, 32½° warmth; time 15 min., pause every four days, gradually being changed for effervescent baths, increasing the time from 10—15 min.; the baths were cooled down by means of ice little by little to 28°. From 29° and lower the time was again reduced to 10 min. On the whole 24 baths, whilst all bodily exertion, such as going up-stairs, etc., was forbidden. On leaving Nauheim he felt perfectly well, the pulse was again normal; sounds distinctly audible; no reduplication in the second sound; enlargement still to be observed.

This gentleman came again the next year, he still felt the pressure a little after riding and dancing, but was not prevented from fulfilling his military duties.

Treatment: 21 effervescent baths from 30½—28°, pause every fourth and then every fifth day, time 15 min. After the treatment he found himself in perfect health and has always kept well since then, as I heard a short time ago; he is to this day in active service.

I will now give an account of a patient, who was suffering from incompetence of the cardiac muscle with cardiac dilatation to a high degree, the origin of which could only be attributed to obesity and chronic bronchitis.

N. N. came under my treatment for the first time in June, 1886, he was then 48 years old. The patient had had an attack of apoplexy 6 years before, in consequence of which the leg and arm of his left side were still partially lame. He had for years been very corpulent and had repeatedly suffered from an obstinate bronchial catarrh, the last attack being in the April before he came to me. Ever since this attack he had suffered from shortness of breath on the least movement and even when in repose. When lying down he could not breathe at all and had therefore for several weeks passed the nights in a chair. His legs

were swollen up to and above the knees; also dropsy in the abdomen. Heart: greatly enlarged to the right and left; the sounds though obscure are still discernible; pulse small 85—90, regular; urine very concentrated, free from albumen. At home he had been taking digitalis without any visible effect; he is to continue taking it for the present with temporary pauses.

Treatment: begins with baths free from carbonic acid, 33° warmth; time 10 min.; every other day and later on a pause every third day; an ice-bag on his head during the bath, which, however, is soon left off as no excitement appears. After 5 simple brine baths thermal baths from Spring 7, 32¼° warmth; time 10 min.; pause every third and then every fourth day. The amount of salt is increased to 3 per cent (Springs 7 and 12) and then augmented still more by the addition of mother-lye. Time extended to 20 min. Temperature only lowered to 31½°. He takes altogether 25 baths; after 10 baths the first night is passed in bed. Dropsy soon disappears, he breathes easier, feels very well, has lost considerably in weight, mostly due to the copious diuresis. Cardiac dulness has become considerably smaller, heart-sounds more audible; pulse fuller, 70. On leaving for home the patient can walk short distances without dificulty. He is ordered to take regular walks at home on level roads and, that he may avoid the acquisition of more fat, he is to continue the prescribed diet, which has been conscienciously observed during the treatment here.

The rapid improvement and more especially the disappearance of dropsy was undoubtedly greatly aided by the continuation of digitalis at the beginning of the treatment, but I repeat what I have already remarked, that the same medicament, although taken in several forms at home

— he came to me from Prof. Rühle in Bonn — had had no effect whatever, whereas in connection with the bath-treatment it proved perfectly effective.

In 1887 the course of baths was again repeated. When the gentleman arrived he was, properly speaking, without any complaint, apart from a little shortness of breath on going up-stairs. As he had become more corpulent (260 pounds), in spite of the prescribed diet, a severer method for reducing the fat was adopted and walking up-hill was added to the bath-treatment, which consisted of 24 thermal brine baths, strengthened by addition of mother-lye, 2—4—6—8—10 litres; 32—30° warmth; time from 15—20 min.

The treatment did the patient so much good that, in spite of the weakness of his left leg, he could climb the Johannisberg which is about 900 feet above the level of the sea, without stopping and by taking a middling steep road. Diminution of weight in 4 weeks 13 pounds.

The next year he appeared again. His corpulency had increased again, in consequence of which he is sometimes rather hard of breathing. The walking is recommenced at once; this time the bathing-treatment consists of effervescent baths from Spring 12 with considerable addition of mother-lye and cooled down from 33—29°. Also this course of baths did him a great deal of good and since then he has been here every year to take from 20 to 25 of the same kind of baths combined with the *terrainkur*. His weight has remained about the same. The heart is normal, with the exception of a slight extension of the dulness to the left, and rather faintly audible heart-sounds.

It may also be of interest to the readers if I here give the history of two cases of disordered circulation by arterio-sclerosis.

CASE I. — **Universal arterio-sclerosis (but on the aortic orifice in particular). Hypertrophy of the heart. Chronic articular rheumatism.**

MRS. N. N., 65 years old, came under my care on June 2nd. 1892. She had been suffering from rheumatic pains and swelling in various joints for about five years and had visited other watering-places without success. Last year she was often complaining of palpitations and shortness of breath. Therefore she was sent to Nauheim. I found swellings in both knees and hands, the fingers and elbows. As regards the heart, I heard the first sound everywhere muffled, less distinct than when normal, especially at the base, where it almost resembled a murmur; the aortic diastolic sound was markedly accentuated and sonorous. Apex-beat visible in the fifth interspace near the nipple-line. Cardiac action frequently intermittent. Pulse 90—100, high arterial tension. The radial and temporal arteries were thickened and tortuous. Sphygmographic traces fixed the diagnosis.

Treatment: Thermal half-bath from Spring 7, 34°, time 10 min., 3rd day omitted; 12 min., 3rd day omitted; bath up to three quarters filled, 33¹/₂°, 12—15 min. duration, 3rd day omitted; full-bath, 33¹/₂°, 12—15 min., 4th day omitted; Spring 7 and 12 mixed, 33¹/₂°, 15 min., 4th day omitted; time 18—20 min., 4th day omitted; effervescent bath from Spring 12, 33°, time 10—12—15 min., 4th day omitted; 15 min., 4th day omitted; 18 min., 4th day omitted; 20 min., 4th day omitted and three more of the same kind, (a course of 30 baths).

On her departure the cardiac action was quite regular, 80 a minute, palpitations and difficulty of breathing remarkably diminished. Swellings of the joints and pain much improved.

I saw her again on June 2nd, 1893. The whole past year she was complaining less of rheumatism and car-

diac troubles. On examining the heart I found the same state as the year before, but the pulse was quieter, 80—90, and seldom intermittent. The elbows were quite normal, knees, wrists and fingers less swollen and more easily moved, but yet very painful.

This year she began with full-baths. She took 15 thermal and 14 effervescent baths, partly strengthened with mother-lye, in the beginning 33°, later on 32° warm and from 12 to 15 minutes duration.

The effect of the course was a further decrease of the rheumatism and an improved heart-action.

On July 17th, 1894, she arrived for a third course. She had been in a relatively good state of health till the month of April. At that time she was seized with gastro-intestinal catarrh and jaundice and in consequence fainted away several times. One of these syncopal attacks being followed by a temporary hesitation of thinking and speaking raised suspicion that she had had a slight apoplectic fit (cerebral embolia).

The condition of the heart was about the same as the year before. The rheumatism had nearly disappeared, but she was still feeling some pain in her hands. She was afflicted with giddiness from time to time.

For precaution I ordered demi-baths again in the beginning of the course as in the first year. She took 25 baths, whereof only 9 were effervescent, all without mother-lye and of 33½°—32° temperature. After the course she felt much stronger and had no vertigo at all.

Next year, on arriving, she had nothing to complain of. There was only a painless swelling on the right wrist.

On the heart I heard a somewhat "impure" first aortic sound; the second sound was still accentuated, but not so sonorous as before. Area of dulness unaltered, heart-action regular, 72 per minute. She took 10 thermal

and 18 effervescent baths, 33° warm and 12—20 minutes duration.

In the years 1896, 1897 and 1898 she took a similar course of baths in Nauheim and was permanently, in spite of her being about 70 years old, in unvaried good health.

Case II. — Arterio-sclerosis with symptoms of angina pectoris.

Mr. N. N., 56 years old, comes to Nauheim for a course in the month of May, 1894. He was complaining of a painful oppression brought on by the least exertion even when walking a few steps on level roads. The pains were radiating from the sternal region of the chest to the left arm and accompanied with severe heart-pang. The attacks ceased immediately when the exertion was left off.

The size of the heart was normal, as far as I could make out by percussion. The sounds were weak, the first on the aorta scarcely audible, the second accentuated and sonorous. Pulse 60, regular, hard, during a paroxysm small and frequent. There was no well marked rigidity of the arteries, but sphygmograms corresponded to arterio-sclerosis.

Treatment: Demi-bath from Spring 7, 33½°, 8 min. duration, 3rd day omitted; 10 min., 3rd day omitted; with one litre mother-lye, 10 min., 4th day omitted; with 2 litres mother-lye, 33°, 12 min., 4th day omitted; 3 litres mother-lye, 4th day omitted; effervescent bath from Spring 12 (also demi-bath), 32¼°, 10 min., 4th day omitted; 12 min., 4th day omitted; bath ¾ full, 4th day omitted and two more of the same kind, on the whole 25 baths.

During the course, but still more after it, the attacks diminished and Mr. N. N. was able to attend to some business, which was quite impossible before his coming to Nauheim.

He took the same number of baths next year. I ordered him to take more effervescent baths and after having had a few half-baths exclusively full-baths, which

he was bearing very well, whereas last year he felt an unpleasant pressure on the abdomen and chest combined with want of breath, when the bath rose a little higher up than prescribed. The attacks came on in a much milder form and not so often. There was now only a slight sensation of contraction of the thorax, the left arm at the same time being somewhat heavy and languid.

A third course in the year 1896 consisted of 5 thermal and 15 effervescent full-baths. The gentleman had now only a few vague signs of the terrible disease he had had, and they only appeared when he was walking immediately after a meal or when going too quickly up-hill.

The success obtained in this case was so perfect, that every physician could not but have doubt whether it was a case of "real" angina pectoris. But I have in the course of time seen many patients of the same kind and still more critical cases treated with a satisfactory result, in which the totality of the subjective and objective symptoms induced me to accept as extremely probable the diagnosis of "real" angina pectoris, *i.e.* sclerosis of the coronary arteries — of course without their being narrowed to any extent.

The mechano-gymnastic treatment in cases of arterio-sclerosis can only be applied to a limited extent. Resistance-movements cannot be allowed in cases of universal arterio-sclerosis of a high degree. A gentle, not too prolonged, general massage, likewise passive movements are almost always permissible. In not too advanced cases I have sometimes successfully made use of a very

mild form of resistance gymnastics, most carefully controlled.

Now I shall quote a case of perfectly cured valvular disease.

N. N., 11 years, comes under my treatment on the 26th May, 1886. The winter before he had had rheumatic fever with endocarditis. Heart: slight enlargement to the right and left; apex heaves considerably near the nipple-line. At the apex instead of the first sound a loud sawing bruit; the pulmonic second sound accentuated — thus undoubtedly a mitral regurgitation. On going away after a five weeks' treatment with 25 thermal brine baths from Spring 7, with 33—32° warmth, I found the heart in the following condition: the murmur still only faintly audible, impulse not heaving so much. Next year a repetition of the treatment. The patient's family physician informed me that the systolic apex murmur entirely disappeared after some weeks. I found only the apex heaving rather strongly and a reduplication of the first sound at the same place. No more murmur was to be heard. Four weeks' treatment; 10 thermal baths and 10 effervescent baths.

Repetition of treatment in 1888. Apex-beat normal. Reduplication of the first tone sometimes to be heard.

Again another treatment in 1889. Heart quite normal; he has had no more rheumatism since the first treatment and I am told that he has remained in good health to the present day.

I have still a few more remarks to make about this case and more particularly as regards the curability of valvular diseases. It is only in a very limited number of cases that I have seen a complete disappearance of well developed valvular lesions, and those have been principally in young persons, where it was evidently either a

question of fresh endocarditic layers on the valve or of infiltrations. But still some, in this way inexplicable cases, have occured to me and I will here add what Prof. Eichhorst of Zürich says in the first volume of his *Handbook on Special Pathology and Therapeutics* about the curing of a defective valve in a patient, who was under my treatment: "Those patients with valvular defects, whom I have sent to be treated at Nauheim, and who had suffered in different ways from greatly disordered compensation, were considerably and lastingly benefitted. One case, however, of mitral incompetence with a gentleman, 36 years of age, was completely cured. After an attack of rheumatic fever the patient had been left with a developed mitral regurgitation and on my advice he visited Nauheim. After the very first visit he returned home considerably improved and after a second stay at Nauheim the symptoms of heart-disease had so completely disappeared that he was able to get himself insured in a very scrupulous life-insurance company, as no sign of the disease was to be discovered".

The gentleman in question was under my treatment for the first time in 1884 and has since then returned every year, with one single exception, for a 3 or 4 weeks' course of baths. Although he has really no complaint now, he still makes use of his business-holiday to come here and take a course of baths as a precaution. Even

now after 10 years, there is no sign of defective cardiac valve to be observed.

That the success neither is, nor can be, always so great as in the preceding cases, I have already stated; but that the results achieved are, on the whole, satisfactory is proved by the fact, that what is stated here in Nauheim is verified and acknowledged by most of the modern English and German manuals on medicine, and from many authors in articles, published in German and foreign medical journals.

I shall now sum up in a few sentences all the advantages of the system adopted at Nauheim for the treatment of disordered circulation of the blood:

It is the peculiarity of the Nauheim baths that in all cases it is possible both to relieve and to exercise the organs of circulation, and also to combine the two treatments so that they may be in perfect accord.

In the same way all the other helpful means at our disposal (gymnastics, *terrainkur*, diet, etc.) must be employed. For this purpose at first warmer, non-irritating, heart-relieving baths are taken; in like manner gymnastics, if advisable at all, are at first mostly "passive" or, at most, slightly "resisting".

With increasing strength of the heart still cooler and more stimulating baths are taken with analogously stronger "resistance-gymnastics" and

walking up-hill. Of course all other conditions, especially the diet, must be strictly controlled and adapted to each individual case.

In this manner it is possible to produce a lasting and sufficient compensation in all kinds of circulatory disturbances that may occur. Frequently we succeed in strengthening the cardiac muscle so much that it is able to support greater and unusual claims made on it; we obtain this partly by invigorating the nervous system of the heart and vessels and partly by producing a better nourishment of the cardiac muscle. Lastly we can sometimes remove non-irreparable changes, which have taken place in the organ in question, eradicate the disposition to certain diseases and set up a general state of health which excludes, as much as possible, a renewal of the circulatory troubles.

We now proceed to another great group of diseases, affections of the nervous system, for which the mineral carbonated baths have in the last thirty years gained a world-wide reputation. I begin with

DISEASES OF THE SPINAL-CORD.

As one of our best authorities on this subject, Professor Erb in Heidelberg, has in his works repeatedly mentioned the favourable experience he has had of the effects of the Nauheim

baths upon these diseases, a continually increasing circle of physicians of all countries have been sending patients belonging to this category to Bad-Nauheim.

It is impossible, in a work not intended exclusively for physicians, to discuss all the different forms of diseases of the spinal cord which are characterised by special symptoms. Speaking therefore strictly in general, we may say that it is possible, with the unusually cautious mode of treatment customary in Nauheim, to produce an improvement within certain limits in all these diseases. This is particularly the case in the widely spread from known under the name of LOCOMOTOR ATAXIA (tabes dorsalis). We know several patients who, on their arrival, were exclusively confined to the bath-chair and yet on their departure they were able to do entirely, or at least partly, without it. In most cases we succeed in improving the ataxic gait, sometimes even in a striking degree, and the number of patients is already very considerable who return here every year to improve their power of walking, to freshen up their general state of health, and to obtain relief from their pain.

For the reasons stated, I cannot treat more fully the question how we are to explain the effect of the baths on these diseases and I must refer those of my colleagues who are interested in this matter to a lecture which I delivered at

the Congress of Balneologists in Berlin in the year 1885*). In this lecture I have also given more details about the usual kind of treatment practised here.

As it is not my intention to quote all the different kinds of affections of the spinal cord, I must content myself with giving only a few directions for the bathing-treatment of the whole of these diseases collectively.

In the first place, all strong stimulating baths are to be avoided, and especial caution is necessary when beginning; this is done mostly with thermal brine baths of short duration, 32½° Cels. (91° Fahr.) warmth, and about 1½ per cent salt, these baths being taken at frequent intervals. Great care must be taken when proceeding to stronger and more exciting baths, namely to those with cooler temperature, longer duration or with a greater quantity of salt. This is likewise the case when combining the baths with cool ablutions, but more especially when prescribing effervescent baths, which when properly applied often do the most good to such patients. Yet it not unfrequently happens in doing this that a relapse in the improvement already made takes place, and we must then, at once, return to a milder kind

*) Groedel: "Is it possible to set down fixed balneotherapeutic indications and methods for the different diseases of the spinal cord?" *Deutsche Medic. Zeitung.* 1885. Nr. 29.

[illegible] we will not jeopardise the whole course [illegible]. Sometimes it is practical to combine [illegible] with a special kind of gymnastic exercises (*gymnastische Uebungstherapie*), [illegible] by Leyden and Frenkel, for [illegible] the newly invented apparatus [illegible] have been put up in the Medico-M[illegible] Institute. In other cases a massage or [illegible] combined with the baths is of use. Yet I think it often advisable to avoid this [illegible] the bathing-treatment, as it is easy to give too much of a good thing and moreover the majority of the patients will have undergone a similar treatment before for some length of time.

Also when making use of the mercury treatment, much recommended in certain cases of locomotor ataxy, and which I have sometimes found very useful combined with the bath-treatment, we must always consider whether the two treatments at once will not be too much. In fact our whole procedure must be so regulated as to have the utmost regard for the strength of these patients and we must put aside everything that can in the least reduce their power of resistance. Yet we often see — in apparent contradiction to this — especially with locomotor ataxia, that the most advanced cases are best able to withstand the strongest baths. Thus I know several patients who, from the beginning of their course of baths to the end, have used scarcely anything but current

effervescent baths of rather long duration and this without feeling any bad effects. According to my experience the patients most susceptible to the irritants of the baths are those suffering from nervous excitement and contractions of the muscles, as, for instance, persons with SHAKING PALSY, INSULAR SCLEROSIS, etc.

For them only baths of very short duration and frequent pauses are advisable, as on the least over-excitement they react sometimes with a very considerable increase of the symptoms. Also as regards the degree of warmth to be prescribed experience has given us some hints, but I will only mention that for cramp-forms, especially SPASTIC PARALYSIS, cool temperatures are less beneficial, than for other affections of the central nervous system. Baths with a higher temperature have also a better, that is, a more soothing, effect on those pains which sometimes accompany diseases of the spinal cord and we frequently see, in cases where cooler baths must be ordered for other more important reasons, that these pains increase. Yet I can here repeat, what I laid stress on in the above mentioned lecture, that as a rule soon after the course of baths is finished the pains become more supportable and continue so for a long space of time.

As instances I will only here relate the history of two cases of locomotor ataxia, one of which treats of a mild form, *i.e.* a recent case

of the disease, which by the immediate taking of a course of baths was brought to a standstill and in which the patient by an almost annually repeated bathing-treatment, succeeded in obtaining such an excellent permanent state of health, that he was never conscious of his illnes and could always fulfil the duties of a very trying and responsible position. In the other case we see an advanced state of the disease, ameliorated in many respects by the bathing-treatment and lastingly improved by a continued repetition of the same.

1ST CASE: A gentleman, 34 years old, whose disease probably arose from an infection taken 8 years before, comes here for the first time, in July 1887, with the following statement: since about two years repeated sharp stabbing pains (lightning pains as they are called) in the legs; since about half a year a moderate weakness in the same, unsteady tottering walk in the dark, otherwise no complaints.

On examination only the loss of the patellar tendon-reflex (knee-jerk) is found and moderate staggering, swaying when the eyes are closed. As he has already been under mercury treatment repeatedly (the last time being in the spring of the same year) this is avoided and a bathing-treatment alone is prescribed in the following manner: thermal brine baths, Spring 7, 32½° Cels., 10 minutes, 3rd day omitted; 32°, 10 min., 3rd day omitted; 10, 12, 15 min., 4th day omitted; effervescent baths from Spring 7, 31°, 10—12 min., 4th day omitted; natural warmth, 12 min., 4th day omitted; 15 min., 4th day omitted; 15, 18, 20 min., 4th day omitted, and so on until 25 baths had been taken.

The success of the treatment showed itself in the disappearance of the pain, greater steadiness, and strength in the legs.

I have seen the gentleman nine times since, when returning to take a course of baths, the last time two years ago; each time the course has had the same effect, in so far that a general improvement in strength took place and the power of walking, which between each course of baths had become somewhat unsteady, was restored again. He had no more pain after the first course. At home he occasionally underwent an electric treatment.

2ND CASE: A gentleman, aged 36 years, comes under my care on the 5. May, 1885. As early as 1874 he had perceived an unsteadiness in his walking, especially in narrow paths, and could no longer either skate or dance. 1875, numbness in the calves. 1876, course of baths in Gastein. At home electric treatment and afterwards several cold-water cures. The disease progressed gradually from the ataxic to the paralytic stage, with occasional remissions. Since January of this year he has not been able to walk and only to stand with support; well marked girdle-sensation; inability to hold urine; lightning pains in the legs; tingling felt in the finger-tips and a sensation in the soles of the feet, as if cotton-wool were interposed between the floor and the skin.

On examination: decided spinal myosis (small pupils) and loss of the iris-reflex to light; absence of knee-jerk, lessening of sensibility in the legs and perfect anaesthesia in some parts of them; muscles very atrophic.

Treatment: Thermal baths, Spring 7 with 1/3 fresh water, 32½° Cels., five minutes, 2nd day omitted; 8 min., 3rd day omitted; 10 minutes, 3rd day omitted; 10 min., 3rd day omitted; Spring 7, 32°, 10 min., 3rd day omitted; Spring 7, 32°, 10 min.; effervescent bath, Spring 7, 31½°, 10 min., 3rd day omitted; three times in this manner alternating thermal and effervescent baths, then effervescent bath Spring 7, 31½°, 10 min., 3rd day omitted; 31°, 10 min., 3rd day omitted; 30½°, 10 minutes, 3rd day omitted; 30°, 10 minutes, 3rd day omitted; 30°, 10 minutes, in all 24 baths.

The patient spent the most of the day in the open air in his bath-chair, had a very good appetite and visibly increased in strength. He could soon stand again alone and dress himself without help; his power of walking gradually returned, so that in three weeks he could walk about 200 steps when led, and in the fourth week he could walk from his lodgings in the lower Parkstrasse to the bathing-house. On leaving he required only the help of two sticks.

On the 3rd of August of the same year he returned for a second course of baths.*) He had in the meantime been staying in the Black Forest, had been taking cool ablutions and looked much better and fresher; bladder better, manner of walking the same as at the end of the first course of baths, but not so dragging. Now he takes nothing but effervescent baths, Spring 7, natural temperature, 10 min., 3rd and then 4th days omitted, cooled down to 23½° Cels., altogether 22 baths.

Towards the end of this second course he was able, with the use of one stick, to walk about a quarter of an hour without stopping. To obtain more was not possible, but the patient was well contented with the result attained, as he was now able to pursue his occupation, and the course of baths, which he repeated regularly from that time, combined with a light cold-water treatment during the rest of the year, enabled him to maintain this amount of moving power until he had the misfortune to break a leg, which again made the assistance of another person necessary while walking. I saw him for the last time in 1891, as he was then obliged to renounce the bathing-treatment on account of another disease, to which he succumbed last year

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*) Also for this malady, as well as for heart-disease, two shorter courses of baths in the same year are preferable to one long one.

What I have said about the treatment of chronic affections of the spinal cord and its good results, applies also for LAMENESS RESULTING FROM OTHER CAUSES, such as apoplectic strokes, typhoid fever, diphtheria, etc.

I should not omit to mention that I have seen very excellent results attained in cases of LOCALIZED NEURITIS and also in a comparatively large number of patients with MULTIPLE NEURITIS.

The recovery from this affection, which is often a very slow one, is greatly aided and hastened by a course of baths. Thus I remember one gentleman in particular, who came here with an almost complete paralysis of the arms and legs and who, after a course of baths lasting eight weeks — towards the end combined with massage — recovered completely with the exception of a certain degree of weakness. As, after some years, symptoms of the same disease began to show themselves again, the gentleman took another course of baths at once and succeeded in nipping the disease in the bud. On both occasions the knee-jerk, which had disappeared, showed itself again during the bathing-treatment.

In close connection with the diseases of which we have just been treating there remains one to be discussed which, as we have already mentioned, is very often confused with rheumatism, namely

NEURALGIA.

These are pains which are confined to a certain region of the nerves, that is to say, occurring in single branches of nerves only, and not caused by an affection of the central nervous system.

The form of neuralgia which comes most frequently under treatment here is SCIATICA, a very painful affection in the back of the thigh; often the pain extends down to the knee, reaching the foot and radiating over the entire distribution of the sciatic nerve. For this disease, which is very obstinate and sometimes withstands every kind of treatment, the Nauheim baths usually do very good service. As a rule I prescribe thermal baths with 34—35° Cels. (93—95° Fahr.) to begin with, and about 2 per cent of salt; these have usually the desired effect. If not, I proceed to effervescent baths from Spring 12 of natural warmth or sometimes a little warmer. When the pain has decreased I somewhat reduce the temperature. Shower-baths can only seldom be applied and always with the greatest caution. Electricity and massage, both of which are used as means against neuralgia, have only exceptionally been employed by me during a course of baths.

I have also obtained very good results with our baths in cases of BRACHIAL NEURALGIA (pains in the region of the shoulder and arm nerves),

as well as of INTERCOSTAL NEURALGIA (pains in the nerves running from the vertebral column along the ribs to the front). Less favourable, if not quite hopeless, are the cases of TRIFACIAL NEURALGIA *(tic douloureux)*.

I shall here add one more disease that increases in a striking manner from year to year and which is surely to be traced back to the social relations of our modern life; I mean

NEURASTHENIA.

WEAKNESS OR EXHAUSTION OF THE NERVOUS-SYSTEM.

This disease, which makes its appearance under the most multifarious forms, is treated with most success in hydropathic establishments. There are, however, many persons who are not able to endure such a treatment. We see a number of such patients in Nauheim, and we succeed almost without exception in obtaining the desired result, by means of a treatment which is cautiously adapted to the different conditions of the patients. In the beginning, thermal brine baths with 32° Cels. (90° Fahr.) of warmth and short duration, then cooler baths down to 24° Cels. (75° Fahr.), now and then current thermal baths, sometimes also effervescent baths, then proceeding to a mild hydropathic treatment, with instructions to remain some time in the "brine-graduating-house", make

use of gymnastics, rowing, etc. — those are the means which, with variations and combinations, lead to the desired strengthening of the exhausted nervous system and herewith to a full recovery of this functional disease.

Especially numerous with us here are those neurasthenic patients with whom NERVOUS PALPITATION OF THE HEART forms the principal part of the complaint and our baths seem to be especially adapted for these patients.

As other functional nervous diseases for which the Nauheim treatment is suited I should here quote HYSTERIA and the so-called TRAUMATIC NEUROSIS and RAILWAY-SPINE, which in latter years has frequently come under my treatment; furthermore ST. VITUS'S DANCE (chorea St. Vitii). For this disease, chiefly affecting children, our baths do decidedly good service, especially when it results from rheumatic fever, as is often the case, or when, as likewise often happens, it is combined with an affection of the heart. Yet I should like to draw attention to what I stated more fully in a lecture*) on this subject, namely, that I consider it absolutely inadvisable to take these patients, during the acute stages of their disease, away from their homes

*) Groedel: "Experiences on Etiology and Therapeutics of the Chorea". *Wiener Medicinische Wochenschrift.* 1891. Nr. 16 and 17.

and send them to bathing-places; one should rather wait until the illness has taken a more chronic, lighter form or is beginning to disappear. Then a course of baths usually entirely removes the appearances of the malady and the patients are sure not to have a relapse.

Now we come to another class of diseases, which brings a very great contingent of the entire bathing public in all brine and chalybeate watering-places, I mean

THE DISEASES OF WOMEN.

For these maladies the family physician is sometimes at a loss to know to which bathing-place he shall send his patient. When it is a question how to produce the absorption of the products of old inflammations, exudations, etc., brine baths are the most suitable. But suppose the patient has become weak during her illness, she is very anaemic; then a chalybeate bath would be advisable. Both these requirements are met with by our carbonated thermal brine in which, as I have explained in the general description of the baths, the qualities of brine and chalybeate water are united. And indeed we continually see such patients using the Nauheim baths with the greatest success. This applies likewise in cases where, through a certain debility of the organs in question, or for other reasons which

we will not specify here, copious loss of blood occasionally occurs and causes a high degree of anaemia in the patient; also in cases of morbid secretions which produce anaemia or, on the contrary, have been produced by it. In all these cases we see here the best results.

I consider it impracticable to enter more fully into this subject, but will only remark that patients, under the conditions just enumerated, as well as others of the same category who often come here for treatment, must be prescribed for according to each individual case, especially as complaints of a nervous nature usually accompany these diseases.

The course of baths mostly begins with simple brine baths free from carbonic acid, and this alone suffices for many patients. Yet we are more frequently obliged to proceed to the carbonated thermal baths, when corresponding to the above-mentioned conditions.

The use of the bathing-speculum, which was formerly so much in favour, has now been almost entirely dropped, as it was found to be hurtful; I cannot, however, omit in this place to caution most earnestly against its use on account of the strong quality of our brine and likewise against strong injections. We must also be very careful when adding mother-lye which is now so frequently used; it is only very seldom that such quantities can be permitted as are used in weaker

brine baths — such as at Kreuznach where it is necessary — for the Nauheim brine baths contain more than double as much salt as those of Kreuznach. This applies especially to cases where it is a question of FLUOR ALBUS (ENDOMETRITIS CHRONICA, etc.)

Brine-bandages, in the manner of the so-called Priesnitz-bandages, on the abdomen are frequently prescribed. Yet even with these one must guard against a too strong concentration of the brine, as otherwise unpleasant irritations of the skin (boils, etc.) too easily show themselves. This seems to be little known away from here as patients repeatedly arrive with instructions to use bandages of mother-lye (!).

The most satisfactory, in fact often brilliant results are attained in such cases where we have to do with more or less copious, often very inspissated, EXUDATA IN DIFFERENT PARTS OF THE PELVIS, following on inflammation of the pelvic organs and for which other remedies inwardly and outwardly applied have not been able to produce any change. I will now briefly relate such a case.

Mrs. N. N., 31 years old, had, after a delivery in the summer of 1879, passed through a severe abdominal inflammation and has been ailing ever since. She arrives here on May 12th, 1880, for a course of baths and complains of exceeding weakness, frequent pressure of urine, stool only obtainable by means of injections, continual oppression of the abdomen and divers other complaints. She was not

able to walk but had to use a bath-chair. Catamenia had only once shown itself very weakly since the beginning of the disease.

On examination the back part of the pelvic cavity was found almost entirely filled with an unusually tough and hard mass of exudata, which also extended to the left side.

The patient had already taken a number of artificial brine baths at home, so I began immediately with thermal brine baths, 34° Cels. warm, lasting 10 minutes and omitting every third day, gradually progressing until they lasted half an hour and were not omitted so often. The amount of salt was increased more and more, till at last 10 litres of mother-lye were added to Spring 12.

The course of baths lasted more than 9 weeks and when the lady departed on July 27th, after taking 40 baths, she was entirely free from all troubles. Only a small quantity of exudata remained, which disappeared of itself in the following weeks. Menstruation had occurred twice during the course in the normal manner, and what with an excellent appetite and with as nutritious a diet as possible, her general state of health had become quite excellent. She was able to do without the bath-chair at the middle of the course and on leaving the patient could walk again as in former days. With the exception of the baths nothing had been ordered but brine-bandages and vaginal injections with ordinary water, which had also been used before the course of baths.

Also in cases of FIBROIDS I have noted excellent results.

One patient in particular I remember, who was suffering from such a tumour so badly — she too was confined to her bath-chair — that an operation seemed inevitable; but several courses of strong concentrated baths had the effect of stopping the growth of the tumour. On the setting in of the catamenia the great loss of blood,

ceased. The lady gathered strength again, and the tumour growing thinner the suffering diminished, so that to-day she is again able to walk about in her house and even to take short walks.

Many diseases of women are accompanied by a very troublesome complaint — a habitual constipation, which should be treated by a corresponding course of our saline cathartic waters. When the patient is inclined to profuse bleeding I consider the use of purging waters to be hazardous, whereas, when it is a question of removing exudata, that kind of treatment — Karlsbrunnen, Kurbrunnen — promoting absorption as it does, is very serviceable.

There now remains only one more group of diseases to discuss, one which occurs particularly in youth; for these complaints brine baths have been much esteemed since the earliest times; these diseases are

SCROFULA AND RICKETS.

There are quite a number of morbid conditions which are the result of scrofula: swellings of the lymph-glands, complaints of the eyes and ears, catarrhal inflammation of the mucous membranes of the nose, the throat and the bronchi, eczema, affections of the joints, periostitis, caries and distortions of the bones, general bodily weakness, backwardness in the development of children,

curvatures of the spine, etc. The last-named affection occurs still more frequently in cases of the so-called rickets, the principal cause of which has always been attributed to impaired nutrition and alteration in the growing bones, whereas scrofula is ascribed to an abnormal procedure in the lymphatic glands, resulting from an increased vulnerability of the tissue. But although the two diseases, rickets and scrofula, indicate quite different conditions, yet they have so much in common and occur so often together, that we can discuss the two at the same time. Both complaints, but especially the rickets, as we have already mentioned, mostly attack infants and can be, as far as is necessary for treatment here, united into two principal groups, viz., firstly children with a pasty, often strong, but also often unnaturally stout, bloated appearance — the so-called "torpid" form; and secondly, the delicate, mostly weakly, and often badly nourished, anaemic looking patients — the so-called "erethic" form.

Those children belonging to the first group usually require stronger baths; for them thermal brine baths from Spring 12, often with a considerable addition of mother-lye, are indicated. A course of drinking-waters, from the Kurbrunnen or Karlsbrunnen, yet so diluted as to prevent irritation of the mucous membranes of the stomach and the bowels, is often accompanied by the best results.

Children belonging to the other group, on the contrary, cannot stand these concentrated baths; the baths free from carbonic acid, which are diluted with fresh water and contain about 1 to 1½ per cent salt are better suited for them. In some single cases, however, I have seen baths with a strong quantity of carbonic acid (effervescent baths) have a very favourable influence on the anaemia of such patients. A course of waters for this category of patients is mostly out of place and instead of it I frequently prescribe milk in large quantities.

What has just been said only applies to cases in general. It must be left to the judgment of the physician, who is superintending the case, to decide which baths and other remedies are suitable for each one, and how the gradual increase in the strength of the means applied may and must take place or *vice versa*, whether a diminution is necessary or not.

For swellings of the glands, bandages with more or less strong brine are also ordered. For bronchial and naso-pharyngeal catarrhs the inhalation-hall assists the treatment. In favourable weather, however, a stay in the "brine-graduating-house" is, according to my experience, of greater use than the inhalation-hall.

For rickets phosphorus, applied inwardly, has been much used of late and this, if continued during the course of baths, has a good effect.

The success achieved in Nauheim in diseases of this kind is often quite surprising. We are acquainted with quite a number of cases, for which the simple brine baths, like Kreuznach etc., were applied without success, when on taking the Nauheim thermal brine baths the desired result was attained. Children thrive here and begin to look quite different, fresher, healthier; swollen glands subside, thick lips and swollen nose recover their normal shape, rashes (mostly eczema) disappear, and so forth. In other obstinate cases however, the success is only partial, and a repetition of the course is necessary; this is in fact advisable, even for cases in which we seem to be fully convinced of the utter extermination of the disposition to scrofula, which is the more important as, according to the latest researches, there is no more doubt that between scrofula and tuberculosis there exists a certain relation.

I shall forbear to mention here A NUMBER OF OTHER DISEASES, WHICH ARE IMPROVED BY THE NAUHEIM REMEDIES, partly because they form the minority of cases and partly because they have already been touched upon while treating of other complaints, as for instance THE KIDNEY DISEASES mentioned when treating of affections of the heart, and CHLOROSIS (green-sickness) with the diseases of women. I usually make chlorotic or anaemic patients drink milk regularly while taking the course of baths and prescribe some light pre-

parations of iron, which, if taken at meals, almost invariably agrees with the patient and is, in my opinion, to be preferred to the drinking of mineral waters which are sometimes taken while fasting. I have been well satisfied with the results obtained here in all kinds of anaemia, whether alone or combined with some other disease.

NASAL, TRACHEAL AND BRONCHIAL CATARRHS I have already mentioned while discussing scrofula. In addition to the remedies which I have enumerated (baths, inhalation, "graduating-house"), I have one more to mention which is very helpful and that is a course of drinking-waters from our Ludwigsquelle, either alone or mixed with water from the Kurbrunnen, which should be taken in the morning while fasting and if necessary once more towards evening. Instead of this whey is sometimes prescribed.

We have now seen, how multifarious and different the diseases are, which are treated with success at Nauheim. This is the result, as I have explained in the beginning of this book, of the great abundance of effective agents in our natural remedies and the therapeutic contrivances which are at our disposal. This induced the late Professor Traube, at his life-time the most illustrious clinical physician at the university of Berlin, to say: "Nauheim is the most favoured of all the bathing-places I know of, because it has the fewest contra-indications" or in other words, there

are only few chronic forms of disease that cannot derive benefit from the remedies at our disposal in Nauheim.

A FEW REMARKS ABOUT TREATMENT AFTER TAKING THE COURSE OF BATHS.

It is a generally acknowledged fact that it is not advisable to return directly after completing a course of baths to the troubles and cares of one's calling or of household management, but rather that a shorter or longer time of rest and repose should precede the work. For this it is often sufficient to remain at a quiet place with a generally favourable hygienic position and without any especial peculiarity. But for certain cases we must look for peculiar qualities in the place to be chosen. For instance, for many patients it is of the greatest importance whether the place in question has a sufficient choice of level walks; this is the case with most of those suffering from heart disease, and for all those patients who are not able to walk with perfect ease (through lameness, affections of the joints, etc.). For other patients we must chiefly take care that there is sufficient opportunity offered for mountain climbing, as in cases of disordered circulation resulting from corpulency. Of the greatest importance for

every one is the quality of the air, its purity and freshness, the vicinity of woods, day and night temperature, violence of the wind, etc. etc. For many patients the height of the place chosen is of great importance. Thus it is not advisable to let a person suffering from heart-disease reside more than about 3000 feet above the level of the sea, whereas for nervous as well as for anaemic patients a climatic health-resort in the mountains at a height of more than 3500 ft. above the level of the sea has often an excellent effect. In this last mentioned case and for many cases of rheumatism a cold-water treatment is often good after a course of baths, also a stay at the sea-side, yet very seldom sea-bathing.

In the first edition of this book I placed a number of climatic health-resorts in groups, as they best suited the chief classes of diseases treated in Nauheim. But in the new edition I have omitted to do so, because I found it impossible to enumerate all the places exhaustively, and because I think it advisable to leave the selection of the place of residence for repose after the stay at Nauheim to the physician, under whose care the patient has been there.

LOCAL INFORMATION ABOUT BAD-NAUHEIM.

THE OFFICIAL SEASON lasts from the first of May to the last day of September, but baths are also given in the months of April and October. During the season the visitors staying in Nauheim are required to pay the so-called

KUR-TAX, about which the following main points may be noted:

Every stranger — excepting physicians, children under twelve years of age, and servants — who remains longer than five days in Bad-Nauheim has to pay a Kur-tax which for a single person amounts to 12 Marks, for a family of two persons M. 18, and for every additional member of the family M. 3. For such strangers as do not remain longer than five days in Nauheim daily tickets are delivered at the price of 50 Pfennigs. On paying the Kur-tax a season-ticket is supplied which entitles the owner tho the use of the drinking fountains and halls, to visit the Kur-park, the Kur-house and the reading, playing and assembly rooms, to the dancing-parties, to the concerts of the Kur-band as well as to the other concerts, which take place on the terrace in front of the Kur-house. The tickets are only available for the owner and are to be shown to the officials when demanded. The Kur-tickets are, if desired, delivered at the dwellings of the visitors, with an extra fee of 20 Pfennigs, yet it is advisable for the stranger to take the ticket himself, soon after his arrival, at the ticket-office in the waiting-room of bathing-house No. VI or II.

LODGINGS AND BOARD. Nauheim affords the visitor a great variety in the choice of lodgings, especially in the newer part of town. The numerous new buildings which have been erected in late years effectually prevent any difficulty in finding lodgings, even in the height of the season, and we are now enabled to meet all claims, even the most pretentious. The price of rooms varies, according to their size, position and furnishing, from M. 10 to M. 100 per week; the lodgings are correspondingly cheaper at the beginning and end of the season. The rooms are, as a rule, if not otherwise expressly agreed upon, let by the week. When leaving one's lodgings an extra week must be paid for if notice has not been given eight days before. The lessor can likewise only give eight days' notice.

Breakfast and supper can be obtained in most of the private lodgings. Many houses give full board, for which M. 4½ (rooms not included) are mostly charged, but in some houses the charges are much higher; on the other hand, it is also possible to obtain full board at very low prices. There are several very good boarding houses for ladies who are alone.

Those strangers, who have not already had lodgings secured in advance, but prefer to look for a dwelling themselves, which is the most practical way, thus avoiding every unpleasantness, should leave their luggage at the railway station

and go directly to a hotel and then from there seek a private dwelling, if they do not wish to remain in the hotel during their stay. If a whole villa is desired it is always advisable to take the necessary steps a few weeks before.

The charges for rooms in the hotels vary so much, that it is impossible to give any fixed prices, I therefore refer to what I have already stated about lodgings in general. For an all-round good attendance in a hotel the prices of course correspond with what is offered. Full board in the smaller hotels costs from M. 3—3.50, and in the larger ones from M. 4—7 daily. In all the hotels and in many private lodgings there are persons well acquainted with the English language.

DIVINE SERVICE. Church of England Service in the new English Church, Victoriastrasse, close to Hotel du Nord. Church notices will be found every week in the *Bad-Nauheimer Kurliste.*

Evangelical Service in the Wilhelmskirche, Wilhelmsstrasse.

Roman Catholic Service in the Reinhardskirche, Reinhardsstrasse.

Jewish Synagogue in the Alicenstrasse.

The time of every Service in the Evangelical, Catholic and Jewish places of worship is also given in the *Kurlist,* which appears weekly.

Committees have been formed to collect subscriptions for a new Catholic and a new Evangelical church.

BADE-DIRECTION. Office hours of the President from 10—11 a. m. in bathing-house No. I; office hours of the Commissioner of baths from 10—11 a. m. in the Kur-house.

SALINEN AND *BERG-AMT.* (Administration of the Salt-works) at the Works in the south-end of the town. Sale of mother-lye and bathing-salt.

CUSTOM-HOUSE for postal parcels and luggage, at the Salt-works, No. 3. Office hours 8—12 a. m. and 2—5 p. m.

COURT OF JUSTICE in the Burgallee, at the foot of the Johannisberg. Office hours from 9—11 a. m.

MAYORALTY in the town-hall *(Rathhaus)* in the Marktplatz, Hauptstrasse. Office hours from 8—11 a. m. and 3—5 p. m.

POLICE-STATION, Burgstrasse No. 24. Office hours from 9—12 a. m. and 3—5 p. m.

POST AND TELEGRAPH OFFICE at the corner of the Parkstrasse and Terrassenstrasse is open for letters and parcels on week-days from 7 a. m. till 8 p. m., on Sundays and Holidays from 7—9 a. m. and from 5—6 p. m. Uninterrupted night and day service for telegrams. Postal delivery on week-days five times daily, on Sundays and Holidays once only. Official places (besides the post-office) for the sale of postage stamps and postal cards, also letter-boxes are found in different parts of the town.

[illegible] all hotels and [illegible] There is also connection [illegible] Cassel and other towns. [illegible] Kur-house.

[illegible] AND CARRIAGES [illegible] There is a sufficient [illegible] for all pur- [illegible] always be provided [illegible] for the in- [illegible] must hang up the [illegible] in the cab that [illegible] the arrival of all trains [illegible] at the rail- [illegible] should be addressed to [illegible] for excursion-parties can [illegible] to agreement.

[illegible] COMMISSIONAIRES is also under [illegible]

[illegible] on hire in several shops.

[illegible] LIBRARIES in se- [illegible] shops.

[illegible] AND EXCHANGE OFFICE, bath-house No. [illegible] 8—1 a. m. and 3—5½ p. m. Every information about travelling and tickets given by Messrs. Schottenfels and Co., correspondents of Thomas Cook and Son. Storing and forwarding of luggage.

SOCIAL AMUSEMENTS. Social intercourse between the guests, each if possible to his own taste and requirements, has a considerable share in the

success of a course of baths, as has also a certain amount of diversion and amusement.

As a rule the forenoon is employed taking the prescribed course of baths, waters, etc. etc., and the afternoon devoted to entertainment and diversion.

THE KUR-HOUSE BAND OF MUSIC, consisting of about 40 members, plays in front of the drinking-hall early every morning during the water-drinking, in the afternoon and evening, if the weather is fine, on the terrace in front of the Kur-house, but if the weather is unfavorable it plays inside. Covered halls being attached to the Kur-house the public are enabled to remain in the open air even in rainy weather.

After the close of the afternoon concerts the greater part of the audience retire to seek amusement elsewhere, either in the open air or in the KUR-HOUSE, which is open from 10 a. m. to 10 p. m. during the season. The principal entrance leads into a beautiful hall. Opposite the entrance is the great concert and dancing saloon, with its mighty pillars and paintings in the style of the *renaissance*. The stage which is built on to the saloon serves for special artistic performances and also as a THEATRE; from the middle of May to the middle of September, there are usually three performances a week.

To the left of the entrance-hall is the room for the servants of the house and the cloak-room;

adjoining this there is the ticket-office for the sale of theatre and concert tickets; then a large assembly-room, a billiard-room and a magnificent reading-room, in which will be found all the leading German and foreign newspapers and illustrated magazines.

The north wing of the house contains, besides the smoking-room and a restaurant, the large dining-room, of the same size as the reading-room. In the upper story of the central building is the consulting-room of the grand-ducal bathing-commissioner and two public rooms with a balcony affording a pleasant view over the park. In the larger room a grand piano is at the disposal of the guests.

All guests have free use of the dominoes, chess and draughts, for which application is to be made to the attendants. Also whist-cards are to be had there by applying to the attendants.

THE CROQUET GROUND is situated in the great chestnut rotunda (*Kastanien-Rondel*). The balls can be had on application from the servants of the Kur-house.

THE LAWN-TENNIS GROUNDS are situated behind the colonnade; rackets and balls as well as tickets are to be had there from the gardener Linkmann.

VELODROME FOR BICYCLISTS outside the town near the high-road to Ockstadt, where

cycling can be learned. Bicycles are to be let out in several shops.

TOUPIE HOLLANDAISE can be played on the premises of the stores of the Sisters Grunewald adjoining the Kur-house.

SHOOTING-GALLERY in the Terrassenstrasse. Different sorts of rifles and pistols.

Tickets for FISHING in the lake and in the Usa can be obtained at the Kur-tax office. For FISHING in the river Wetter application should be made at the Park-hotel.

Opportunity is also afforded to join HUNTING-parties; enquiries to be made at the principal hotels.

On the lake there are a number of good BOATS which, for a small charge, are at the disposal of visitors.

Further variation in the amusements is provided by the arranging of FIRE-WORKS, ILLUMINATION of the park, the terrace, the drinking-fountains and the lake; there are also MILITARY AND OTHER CONCERTS, CHILDRENS' FESTIVALS, and so forth.

DANCING-PARTIES take place as a rule every Thursday evening.

The time between the afternoon and the evening concerts is chiefly employed in taking walks or making excursions in the neighbourhood.

WALKS IN THE VICINITY OF THE TOWN.

One of the most prominent productions of landscape-gardening in Germany is THE GREAT PARK (ca. 175 acres) at Nauheim. Its magnificent groups of trees and charming vistas delight the eye, and it is, with its abundance of splendidly developed plants, among which there are some very rare ones, of great botanical interest. It contains many delightfully shady walks, especially in the upper and more woody parts. Some of them bring us to

THE TEICH AND THE TEICHHAUS

(LAKE AND LAKE-HOUSE)

which is immediately adjoining the park. Here in front of the landing-place for boats is a restaurant with garden and terrace (the so-called Teichhouse). The lake covers more than 20 acres and is obout 12 ft. deep. A large number of ducks and swans and gaily coloured boats animate the surface of the lake which forms one of the principal points of attraction, especially in hot weather when a cool refreshing breeze is wafted from this

large expanse of water. A path, which is bordered by old willows and young alder-trees, winds round the lake and is the favourite walk of all visitors.

Shortly after having passed the Teich-house a path crossing a small bridge on the left leads to the

DONNERSGRABEN,

a picturesque wooded ravine, recently provided with seats and laid out as a promenade, which rises gently until it joins the road from the Frauenwald to the Johannisberg.

At the north end of the lake there is a pleasant foot-path, along the side of the Usa river and leading to the village of Nieder-Moerlen which we shall mention later. About 300 paces after leaving the pond another path branches off to the left and leads to the

FRAUENWALD,

a wood of oaks extending for some distance over an elevated table-land, where much wood was felled in former times, but which has been, for the last few years, preserved for the use of the Nauheim visitors. This conveniently situated wood has now been provided with good paths, in consequence of which it has become a popular resort, especially since the path has been finished which connects it with the adjacent

JOHANNISBERG.

The most convenient way to arrive at this favourite resort of tourists is a road branching off from the Kur-house. A finger-post standing there shows the way along the Victoriastrasse, which, leading past the Hotel du Nord, arrives in about 5 minutes at the wood. From there one can either follow the main-road or turn off to the left into a foot-path which leads through the wood and arrives at the top in about 10—15 minutes.

Another way, very steep and almost entirely without shade, forms a direct continuation of the Parkstrasse, from the court of justice onwards. If this way is too steep, one can turn off to the right through the Burgallee and reach the wood-path we have already mentioned, that leads from the Kur-house, or by turning to the left along the Waldstrasse, come into a well-kept foot-path that runs along the south slope of the mountain through orchards and meadows and affords many a beautiful view of the surrounding landscape. The tower, which stands on the top of this hill (890 ft.) was formerly a church and is said to have been founded by Boniface, the apostle of the Germans; it was made higher in the spring of 1866 and provided with a platform and steps leading up tu it. (Key to the tower and also a telescope may be had at the restaurant Koenig, which is near the top of the hill). From this

point there is a most beautiful view of the surrounding country and the distant mountains; with the naked eye one can see upwards of 80 villages, the cathedral of Frankfurt, the Melibocus mountain in the Bergstrasse, the Donnersberg in the Palatinate, the Vogelsberg and other distant summits; below is the town of Nauheim with its flourishing gardens and orchards and beautifully wooded park. A good view is also obtained of a great part of the Wetterau, that fertile undulating plain, watered by the rivers Wetter (hence the name) Usa, Horloff, Nidda and Maine, and lying between the Vogelsberg and the Taunus mountains, the Maine and the Lahn rivers. In the older times of the German empire the Wetterau was a region divided among different rulers; Friedberg, Gelnhausen, Frankfurt and Wetzlar were imperial free-cities of the Wetterau, although the two latter did not, properly speaking, lie in that district.

A few paces below the tower is the above-mentioned restaurant, built in Swiss style; it is a much frequented establishment with a spacious terrace and is well worthy of recommendation.

The parish of the Johannis-church is said to have once included Friedberg, Nauheim, Nieder-Moerlen and Ober-Moerlen; the church patronage was held in fief from the Abbey of Fulda by the lords of Muenzenberg and later on it fell into the hands of the chapter of Mainz.

On a certain Easter Sunday when the inhabitants of Nauheim, who had become converted to the Protestant religion where assembled for prayers in their meeting-room, they learned that the Catholic inhabitants of Ober and Nieder Moerlen were on their way to take possession of the treasures and relics of the church. With the minister at their head the inhabitants of Nauheim sallied forth to the mountain, drove off the enemy who were assaulting the church, and took away the treasures with them. In memory of what their ancestors did so many years ago the inhabitants of Nauheim still celebrate a church festival on the Johannisberg every Easter Sunday.

On this mountain the Hessians and the French have twice met face to face; the first time in the year 1762. A bullet which is buried in the wall of a house in the Apfelstrasse is a memorial of this encounter. On the 27th of August in the same year the French under Prince Condé encamped on the hill; on the 29th they withdrew again, but as, on the following day, they again took possession of the hill the hereditary Prince of Brunswick attacked the enemy, in spite of their having been reinforced, and recaptured the town of Nauheim and the Johannisberg. The French, however, pressed on under Prince Soubise and Marshal d' Estrées in overwhelming numbers and defeated the hereditary Prince with a loss of nearly 2400 men and 12 cannon.

The second encounter took place in the year 1792. From Mainz Custine sent 1800 men under Colonel Houchard against Nauheim to fetch the supply of salt which was kept there in reserve. 125 Hessians under Captain Martorf were posted in Nauheim for the protection of the salt-works, these, on the approach of the French, retired to the Johannisberg and it was only after they had expended all their ammunition and repelled two attacks that they at last yielded to superior force.

Instead of returning from the summit of the Johannisberg by the ways which have already been mentioned, the tourist can continue along the road beyond the tower, which first keeps in a straight direction and then turns off to the left, through the wood, down over the so-called Lichtenberg on to the main-road (Usinger Chaussée), which in about 10 minutes brings him to the western end of the town; or he can turn from the Usinger Chaussée to the left and keep along a narrow path that leads through the meadows to the Waldstrasse and Parkstrasse.

At that point on the top of the hill where the road turns to the left over the Lichtenberg, there is also a path branching off towards the right. This way leads in a rather round-about direction, through shady lanes down to the road just at its junction with the main-road. In the morning, or towards evening, when it is not too hot, one can by taking the second turning to the

right, get out of the wood and then keep along the outskirts, whereby a beautiful view of the mountain-range can be enjoyed; this way also leads on to the main-road (Usinger Chaussée), somewhat higher up.

If a longer walk is desired one has only to enter the wood on the other side of the Usinger Chaussée to arrive in a short time at the

NAUHEIMER HOCHWALD,

and to find it very agreeable to linger a while there in the fresh, invigorating air, to enjoy a short repose under the mighty oaks, or in the garden-restaurant, far from the noise and bustle of the fashionable watering-place. Numerous shady paths and some well kept roads cross the wood. By following one of them in a southerly direction the visitor comes to a large pine-forest, and another brings him to a charming silvan pond on the south western border of the wood, where everything is delightfully quiet and restful. From this point there is a beautiful view of Friedberg. The road which branches off from the Usinger Chaussée at the lower extremity of the wood, brings the wanderer directly to the forest-inn, where there is good attendance.

When returning, there are several ways leading across meadows and through copses, all

conducting to the town in about 15— 20 minutes. But it is not so easy to find one's way direct from the town to the Hochwald and therefore it is advisable to make exact inquiries before setting out. From the map attached to this book it will be easy to make out the direction that has to be taken. The Nauheimer Hochwald and the other woods adjoining, with their many shady walks, are not nearly so well known and appreciated as they deserve to be, or else we should not so often hear complaints about the want of wooded districts in the environs of Nauheim.

Of other walks in the neighbourhood we will mention the

GOLDSTEIN,

a newly laid-out little park lying on the other side of the station; this well wooded park is reached by following the Lindenstrasse, which crosses the main-road and the railway-line; from here we enjoy a beautiful view of Nauheim and the mountain in the back-ground and also the near town of Friedberg.

Another inviting and shady walk leads along the left bank of the Usa towards the brine-graduating-house and the children's hospital, where a bridge crosses the river. Here we find the buildings of

THE SALT-WORKS.

It would perhaps be of interest for many to see the preparing of the salt in these works, and therefore I will offer a few explanatory remarks.

That part of Spring No. 12 which is not made use of for the baths is conducted through a long line of pipes and then along an open ditch, beginning near bathing-house IV, to a large reservoir. In this way a great part of the firm earthy ingredients which this water contains is lost and the brine is then raised, by means of several pumps, into the graduating-works, which are filled with black-thorn (prunus spinosa); the brine drops down through these thorn-bushes, whereby the calcareous and ferruginous salts remain attached and gradually petrify the thorns. At the same time a part of the water evaporates and this is repeated continually until about $^7/_8$ of the water has disappeared and thereby out of the original brine with 3 per cent of salt, one with 26 per cent of salt is obtained. This concentrated brine is now brought into large boilers and boiled until the kitchen-salt contained in it comes in a crystallized form to the surface, whence it is drained off. The liquid remaining after this process is the MOTHER-LYE, or *Mutterlauge*, which contains the sharpest and most easily soluble salts, especially a great deal of chloride of calcium, wherefore it ex-

; most other mother-lyes and particularly that Kreuznach. It is used for strengthening the hs and also for the preparation of artificial ıe-baths. For sending away it is usually kept ling until it becomes a firm mass, which, howe-, dissolves directly on contact with damp; this ıhe so-called BATH-SALT. Both mother-lye and h-salt can be procured direct from the salt-·ks. Orders should be addressed to the Grand-al salt-work's revenue office (Grossherzogliches inen Rentamt) in Bad-Nauheim.

SHORT EXCURSIONS IN THE VICINITY OF BAD-NAUHEIM.*)

From the Nauheim Hochwald there is a path, in the beginning marked with red and white and afterwards with white and orange signs on the trees, which leads to the mountain, called

WINTERSTEIN,

which lies about 1700 ft. above the level of the sea and is about two hours' walk from Nauheim. Following the road (the above-mentioned Usinger-Chaussée) which leads past the so-called Haselheck, carriages can only proceed as far as the Forsthaus, where there is a good restaurant with moderate prices, and from there a steep path leads up to the top in about 15 minutes; here the traveler will find steps up the rock, which crowns the summit, to an embattled belvedere, from whence he will have a splendid view of the Taunus range, Friedberg, Nauheim, the Wetterau,

*) In the Parkstrassen-Allee, near the beginning of the Terrassenstrasse, there is a board showing the signs of the different pedestrian tours, as arranged by the Taunus-Club.

the Vogelsberg, and the plain of the Maine. Nearly there is a small hut as a place of refuge.

The path leading from there marked with a red triangle conducts us over the Steinkopf (1800 ft.) to the Capersburg (45 min.), an old Roman fort of which some interesting remains are to be seen, and then, along the Pfahlgraben (old Roman fenced ditch), which is in a good state of preservation, in about an hour to the Lochmühle (a simple inn) in the Köpperner valley, near which there are remains of an old Roman fort; 30 minutes farther on we arrive at the Saalburg (particulars later) and by following the so-called Hammelhausweg or the König-Wilhelms-weg for about an hour and a quarter we come to Homburg, whence the train can be taken for the return to Nauheim.

Good walkers can return from Winterstein by way of

OCKSTADT

(inn kept by Henrici and Klingl), where the Freiherren von Franckenstein have great landed property. Of the old castle there are only a few remains. Not far from the village lies the St. George's chapel and the Hollar-chapel, which tradition says was inhabited by a hermit; nearby a Roman fort was found covering about 1900 square yards and surrounded by a wall of earth, flanked by a quadrangular and a hexagonal tower.

A favourite road from Nauheim to Ockstadt (1 1/2 hours) leads through an oak-wood (the Hochwald) and then through a beautiful wood of pines across the so-called MARIENLAUBE, an arbour in a somewhat elevated position on the border of the wood, that has a lovely view towards the Wetterau.

Returning one can keep along the outskirts of the wood (1 1/4 hours) or along the high-road (3/4 hour) or else pass through

FRIEDBERG

which offers a picturesque view to the west, north and east. This town is about 5 minutes distant from Nauheim by train, 15 minutes in a carriage and 45 minutes on foot along a foot-path which traverses the salt-works and is planted with fruit-trees on either side. At the end of this path, where it joins the high-road, there is a garden-restaurant "Zum kühlen Grunde" with a skittle-alley. Following the high-road on foot from Nauheim takes about an hour.

The favourable situation of Friedberg in the centre of the flourishing Wetterau is the reason of its having such a brisk traffic and commerce. (Hotel Trapp; garden-restaurant Steinhäusser, Windecker and Schmitt.)

Friedberg consists of the city proper and the spacious citadel; the former was a Roman town, the latter a Roman fort; remains of Roman build-

ings, vases and coins that have been found indicate that a large colony must have settled here. Altogether there have been some very interesting finds of articles from ancient times in this vicinity, which have been mostly presented to the Museum of Darmstadt.

Friedberg, in the 11th century called Friedeberg, or Fredeberg, was in the year 1211 declared a free city of the empire by the Emperor Friedrich II.

The citadel was an imperial *Burg*, governed by an imperial Burgrave, who was elected by and from among the nobility of the Wetterau. There were often quarrels and conflicts between town and *Burg*.

In the Thirty Years' War Friedberg was taken by the imperial troops in 1634 and 1640; in 1645 it was in vain stormed by the Hessians. In the year 1802 the town of Friedberg was incorporated with Hesse-Darmstadt; in 1817 likewise the citadel.

In the beginning of the 13th century Friedberg was a wealthy and flourishing town; the remains of the town-walls show how extensive the town was at that time. In the year 1383 a part of it was burnt down and when, in the year 1447, the town was placed under the ban of the empire, it was set fire to by the enemy and about 700 houses were burnt to ashes.

In Friedberg there formerly existed a monastery of Carthusian and Augustine monks and a nunnery. Of the buildings and institutions which are at present to be seen there, we may mention the asylum for the deaf and dumb and another for the blind, the seminary for teachers and clergy and the school of agriculture with a pomological garden. The newly built Catholic church with its peculiar wooden arches in the early Gothic style is well worth seeing; but especially interesting is the town-church (Stadtkirche or Liebfrauenkirche), 230 ft. long and 92 ft. wide, which was built in the years 1290—1320. The three aisles of equal height rest on high pillars, the transept, from the years 1290—1310, with beautifully painted glass-windows — at the top, bishops, saints, apostles and prophets, at the bottom geometrical signs, — projects a little on the long side; the end is formed by the octogonal choir. Here there is an old Gothic sacristy of the year 1520—70, with a pretty grating and stone steps leading up to the altar. In the pavement of the choir there are numerous grave-stone tablets, the oldest from the year 1376. The walls of the church having lately shown dangerous strains a radical renovation, which will take several years, has been considered necessary.

The Realschule and Gymnasium, (Augustinerschule) one of the oldest upper-class schools in Germany, is also very interesting; it originates

from the Latin school which was founded in the rooms of the Augustine monastery in the year 1543. The rooms not being sufficient for the ever increasing number of scholars, a new school-house will soon be built.

In the ancient Judengasse there is the so-called *Judenbad*, a bathing-house where the Jews formerly took ritualistic baths and which is said to have been founded in the year 1273; the quadrangular basin of the bath is about 90 ft. deep, round which runs a balustrade supported by arches and Roman columns; 66 stone steps lead down to the bottom. Entrance is obtained through a low early Gothic door in an old house. Patients should refrain from descending into the bath on account of the awkward steps.

A memorial tablet placed in a house in the Kaiserstrasse shows where Dr. Martin Luther passed the night of April 28th, 1521, on his return from the *Reichstag* at Worms.

The perpendicular basaltic pillars at the west end of the fortress serve considerably to give this part of the outer stronghold a singular appearance. In the inner fortress a remarkable feature is the ancient castle of the Burgraves, now belonging to the Grand-duke of Hesse, attached to which there is a beautiful garden open to the public. Near this there is a building formerly belonging to the so-called *Deutsche Orden*, a German order of knighthood, and in front of this is

a square in which there is a spring, the St. Georgsbrunnen, with the coats-of-arms of many knights. There is also a round tower which was built by Count Adolf von Nassau on being released from his imprisonment, which he had brought on himself by attacking the fortress in the year 1347 and being beaten by the knights of the fort and the citizens on the Altzenküppel. The walls are 13 ft. thick and the diameter of the tower is 40 ft.

Near the outside gate of the fortress is the extensive building of the schoolmasters' seminary, the front part of which formerly contained the public offices of the *Burg*. Opposite this building there is a monument of the seminary-teacher and composer of songs, Peter Müller, who died in the year 1877.

After leaving Friedberg and passing through Fauerbach and Ossenheim, two small villages, we come to the

OSSENHEIMER WÄLDCHEN

a pretty little wood 1½ hours' walk from Nauheim (with the carriage ½ hour). Here we have a clear view of the Taunus. In the quiet little forest-house on the border of the wood there is good service with moderate prices. Proceeding from the restaurant in a southerly direction through the wood we arrive in 15 minutes at the village of

ASSENHEIM

of which we find first mention in the year 1193. Here there is a station of the Friedberg-Hanau railway and a castle owned by Count of Solms-Rödelheim with a beautiful garden. There is also a remarkable railway bridge leading to a dizzy height. To the south of Assenheim and distant about 2½ hours from Nauheim lies

ILBENSTADT

(restaurant: Drei Hasen) where there is a beautiful church built in the year 1123 in the Byzantine style, which belonged to a cloister for premonstrators, raised in 1647 to be an Abbey; in 1803 it became secularized and now belongs to the Count of Leiningen.

It takes us 10 minutes to go by railway from Assenheim to the village of

KAICHEN

which is of historical interest for its having formerly been the seat of a free tribunal, where, from the year 1293, a court of justice was held in the open air. Under an old lime-tree the stone table of justice and stone benches on three sides are still to be seen.

From Kaichen a very pleasant walk takes us to the romantic and beautifully situated

SCHLOSS NAUMBURG

originally built by Gisela, wife of the Emperor Konrad II. (1024—1039); at present, however, after many vicissitudes, it contains nothing but buildings for agricultural purposes.

A favourite point of attraction is the

SCHWALHEIMER BRUNNEN.

The mineral spring of Schwalheim can be reached on foot in about 50 minutes (finger-posts at the salt-works, the graduating-house and in the village of Schwalheim).

On leaving the salt-works we see the village of Schwalheim lying before us, in the midst of verdant meadows, watered by the river Wetter with alder-trees along its banks, in the foreground a large water-wheel, which works the pumps for the graduating-houses. The church which stands on an eminence, and the large wheel of the salt-works, help to enliven the scene. The church was built in the year 1850, and in 1890 the roof and walls of the interior were painted in the Roman style; this style is also adhered to in the windows and doors, the aisle and the tower.

After passing through the village we find ourselves in the country, and the eye ranges freely over the luxurious plains of the eastern Wetterau as far as the Vogelsberg, while down below in the valley the laid out grounds round

the mineral spring and the restaurant invite us to stop and rest.

This mineral spring which was mentioned in the year 1589 by Tabernaemontanus in the "Neuw Wasserschatz der Schwalheymer Sauerbrunnen" as a remedy for obstructions in the throat caused by phlegm, was formerly the property of the corporation of Schwalheim, but is now in possession of the state.

Every cleaning of the well (about 12 ft. deep) brought to light Roman coins, with imprints of the emperors Vespasian, Titus, Domitian, Nero, Trajan, Hadrian and Antoninus, of which several are preserved in the museum at Cassel. It is said that 60 coins were found in the year 1811, in 1827 from 30 to 40 and in 1831 only five.

In the year 1856 during the fresh setting of a well of mineral water, at that time situated in an alder-copse, 23 copper and 3 silver Roman coins, also the remains of a Roman bathing-establishment were discovered near the well under a heap of rubbish.

The building, which was erected in the year 1834 for administrative and agricultural purposes, was fitted out in the year 1860 by the then tenant as a bathing-establishment for mineral-water shower-baths, which however was soon after allowed to fall into disuse.

It is now proposed to make great improvements in the grounds laid out round the well.

The water is one of the best mineral-waters in Germany, that is to say, it has a very large quantity of natural carbonic acid. In this neighbourhood it is drunk as an agreeable table-water and is exported in great quantities. Other not unimportant mineral springs, the water of which is also greatly exported, are the Selzerbrunnen near Gross-Karben and the Taunusbrunnen near Okarben. (Railway stations on the line from Nauheim to Frankfort).

Very near the Schwalheimer Brunnen lies the palatable Germania-Brunnen.

From the Schwalheimer Brunnen a path across the meadows leads to the village of

DORHEIM

within the boundaries of which traces of a Roman settlement have been discovered. There is also a castle with grounds attached now owned by the Count of Solms-Roedelheim. A country-inn called "Zur Sonne" offers refreshments. The return journey to Nauheim along the elevated high-road takes about an hour.

One of the most beautiful places for excursions is ZIEGENBERG; it is usually made in a carriage (about one hour's drive).

We next arrive at the village of

NIEDER-MOERLEN,

at the entrance of which there are the garden-restaurants "Zum Löwen" and "Zum Frauenwald".

To reach there on foot from Nauheim we must leave the end of the lake and keep along the banks of the Usa or along the border of the Frauenwald (25 min.). From here the high-road leads through

OBER-MOERLEN,

where there is a castle surrounded by high walls and owned by the Freiherrn von Rabenau. (Country-inn kept by Jeckel, the late mayor of the village.) From Nauheim a foot-path over the Johannisberg leads to Ober-Moerlen in 50 min. In the church there is a remarkable altar-piece painted by the celebrated Professor Hofmann of Dresden. On leaving this village the way is more interesting as the valley of the Usa becomes narrower and its meadows are bordered by fresh green woods. Small lateral valleys and projecting rocks give a picturesque beauty to the valley. On the west of the little village of

ZIEGENBERG

(Restaurant Moeckel "Zur Linde"), and situated on a high rock, rises the castle which originally belonged to the Count von Kleeberg. It came successively into the possession of the lords of Falkenstein and Eppenstein, in 1478 into that of the Count von Katzenelnbogen and then to Hesse. Philip the Magnanimous gave it in fief to Frei-

herr Diede von Fürstenstein; on the extinction of this family at the beginning of the 19th century it came into the hands of Freiherrn von Loew and Count Rantzau. The present owner is Mr. Passavant of Frankfort. Of the old castle there is now only one tower left, the rest was built in the middle of the last century. Goethe often visited this castle as a guest; a bench made of rough wood in the garden of the above-mentioned restaurant is said to have often served the poet as a resting-place. The scenery in his "Wahlverwandtschaften" has much resemblance to this place. Of the park that part near the pond, that lies in front of the castle, is especially worth visiting. The magnificent wood that surrounds Ziegenberg on all sides, the many well-kept paths that lead in all directions to the delightful summits, but especially the peaceful quiet that surrounds us, induces us frequently to seek out this charming spot. For good walkers there are several charming excursions to Ziegenberg from Nauheim. First over the Johannisberg to Ober-Moerlen and from there along the high-road to Ziegenberg (2 hours). A pleasanter way is to go to the Forsthaus Winterstein, whence several paths lead direct to Ziegenberg (2½ hours). It is still more interesting to go from the Forsthaus, past the Kaisergrube (a lead mine) and then through Cransberg and to return by the high-road and across the Johannisberg (in all 5 hours). During exca-

vations made in the year 1890 for the Kaisergrube, the remains of an old Roman fort were found, 337 ft. in circumference, surrounded by a ditch, 36 ft. wide, and about 16 feet distant from the *Pfahlgraben*, which formed the Roman boundary lines and was made by the Romans under Domitian as a defence against the Germans, at the end of the first century. Passage through these lines was only allowed in certain places, the larger passages being guarded by forts and the smaller ones by watch towers. Stretching across the Rhine over the Taunus these lines enclosed the Wetterau and inclined to the south towards the Main near Hanau. At Langenhain near Ziegenberg a castle was discovered 257 yards long and 216 yards wide with four gates, inside were paved walks parallel to the sides of the castle and crossing each other at right angles. In front of this castle a road with ditches was discovered leading to Friedberg. Nearby at the so-called *Burg* at Langenhain the remains of another castle were found. Of all this, however, there is nothing to be seen now as everything was covered up again. Visitors who venture to visit Ziegenberg should not fail to take a drive (20 min.) through the beautiful valley to

CRANSBERG

or to return by way of Cransberg, Pfaffenwiesbach, Forsthaus-Winterstein, which only requires

half an hour more than the direct route. Cra[illegible] berg itself has something unusually attractive a[illegible] romantic, so that every one who sees it for t[illegible] first time is delighted at the lovely picture whi[illegible] the little village affords with its high-lying chur[illegible] and its little castle crowning the rocky hill.

According to tradition there lived in olde[illegible] times on the summit of the Cranichesburg (Cran[illegible] burg) a German warrior. The king of the pagan[illegible] who lived near saw the warrior's daughter, fe[illegible] in love with her and demanded her in marriage[illegible] of her father; the latter seeing no chance of ob[illegible] taining help or assistance cast the maiden dow[illegible] the steep rocky side of the hill, saying: "Dead[illegible] you may have her, but living — never." The present owner Freiherr von Biegeleben had a new castle built in the mediaeval style. Of especial interest is the very old *Holzbau* in the interior of the castle, to which admittance is obtained through an iron gate, on which there is a coat of arms, also in iron, representing two cranes, as an emblem of the former owners of the fortress. Leading from the castle there are several beautiful paths through delightfully shady woods and green meadows, among which there is an avenue of beeches leading to a solitary chapel in the wood. It is well worth while to rest a little in Cransberg and after having seen the castle to seek out this avenue. Country-inn "Deutscher Kaiser."

Lovers of roses should not miss a walk (50 min.) or drive to a village of which we find mention as early as A. D. 914, namely the village of

STEINFURTH,

which has, since the beginning of the 14th century, been the seat of the Freiherren Loew von Steinfurth. To go there on foot it is best to cross the Usa at the end of the lake and take the direct road to Steinfurth which branches off just at that place. Near Steinfurth and partly adjoining the high-road leading to that place there are large rose-fields, where the firm of Schultheis Brothers and several others cultivate roses. The principal blooming-time is from the end of June to the middle of October. Restaurant by Jean Rosenbecker. From here we can also return through

WISSELSHEIM

where we arrive in about 50 min. Till about 50 years ago there were salt-works in this village and one of the brine springs is still in existence. Close to the road there is a pleasant-tasting weak mineral-water bubbling up out of the earth. From Wisselsheim we pass through the above-mentioned Goldstein to return to Nauheim.

From Steinfurth after walking 1¾ hours through the forest we arrive at

BURG MUENZENBERG

built in the second half of the 12th century the Romanic style, presumably by the archit of the Emperor Barbarossa. It is one of the m beautiful and interesting monuments of the mid ages.

The first documental reference to this fo ress is in the year 1166. It frequently chang hands in the course of centuries and now h several joint-owners, the Grand-duke of Hes the Prince von Solms-Braunfels etc. Out of fund which has been gathering for years mu has been done for the restoration and maintena of the castle that began to fall into ruins in t 17th century and especially during the Thi Years' War, having been bombarded by Till troops in 1628.

These ruins are popularly called the "I stand of the Wetterau" on account of the t projecting towers, one 79 ft. high the other 95 In 1847 the latter has been provided with st and from the platform on top there is an ext sive view.

At the foot of the basalt-rock on which th castle is built lies the little town of Muenzenber The church and the quaint-looking houses ar worth seeing. Good restaurant at Jaeger's, com plete dinners if ordered in advance. Good wines.

Besides the foot path to Muenzenberg through Steinfurth, other ways can also be taken, viz., the railway to Butzbach 10 min., from there 1/2 hour's drive (or 1 1/4 hour's walk) through Griedel. The most practical way is to take a carriage in Nauheim and drive through Steinfurth, Oppershofen and Rockenberg (with an old castle) in 1 1/2 hours to Muenzenberg and then back, also in 1 1/2 hours, through Griedel, Butzbach and Nieder-Weisel.

A short distance from Muenzenberg lies the former Cistercian Abbey of

ARNSBURG.

Conrad von Arnsburg founded, in 1152, a Benedictine cloister in Altenburg near Arnsburg, but Cuno von Arnsburg, finding that a great lack of morality prevailed in the cloister, removed it to Arnsburg at the same time transforming the order and making it Cistercian. Owing to its great wealth the abbey was, in 1215, put under the protection of the Burgrave of Friedberg by the Emperor Friedrich. It was exposed to the ravages of the Thirty and the Seven Years' Wars. Of the old abbey only the chapter, the wine-cellar, the building containing the sleeping-apartments and the ruins of the once magnificent church now remain. Everybody is urgently recommended to visit these relics of a brillant past. All the buildings, more especially the church, are of highly

interesting architecture, and we seldom see such an impressive picture as that presented by the high roofless walls with their large groups of pillars and bare windows, when the sun is shining from a clear sky into the once sacred rooms. The other buildings now serve as a refuge for destitute girls under the direction of the deaconesses of Darmstadt. In the neighbourhood there are many grave-mounds both of Germanic and of Celtic origin.

The little town of

BUTZBACH

which we have already mentioned and which existed under the reign of Charlemagne, possesses the remarkable and very old church of St. Wendel, and what was formerly a castle, built by the Landgrave Philip von Butzbach, but which is now used as barracks. Restaurant "Zum Hessischen Hof", "Zum Löwen" and "Kalbfleisch".

In a field near Butzbach, called "Hunnenburg" was discovered, as at Langenhain, a castle of the *Pfahlgraben*, lying 300 paces from the old Roman road, which coming from Friedberg runs to the north of Nauheim and to the southwest of Butzbach. The castle, 232 yards long and 148 yards wide, had one simple and three douple gates and 24 towers. Within the walls there was a large *Praetorium* and a number of streets. Another castle in front of the one already discovered is still to be excavated.

Taking a westerly direction from the railway station through a very beautiful beech-wood, past the little village of Hausen lying in a glade, we come in 1¾ hours to the

HAUSBERG

With a plateau surrounded by two walls, formerly used as a place of refuge by the Germans; here there is a look-out tower. The key to this tower is to be had from the mayor Häuser of Hausen, who is proprietor of a country-inn, or in the "Hessischen Hof" in Butzbach. From the tower there is a beautiful view of the wooded heights of the Taunus, the Westerwald and of the country near Giessen, This excursion is well worth recommending. One can also drive from Butzbach in a carriage nearly to the top of the mountain.

EXCURSIONS TO MORE DISTANT PLACES.

From Bad-Nauheim many excursions can be made by railway in different directions.*) These offer abundance of change and tend to make even a lengthened stay in Nauheim agreeable. The visitors usually take bath-free days for such excursions which however, should never be undertaken without the consent of the physician under whose care they have placed themselves.

One of the most favoured is the excursion to

FRANKFORT-ON-THE-MAIN

to which one can go at any time of the day (fast trains 40 min., slow trains about an hour). By taking the fast train at about 8½ o'clock

*) Special guides for these excursions, which we can only give a short description of here, are always to be had at C. Bindernagel's, bookseller, in Nauheim.

(the first one starts at 5½ o'clock)*) the principal sights of Frankfort can easily be seen in one day. The best plan is the following: on arriving in Frankfort take a carriage (cab) and drive through the principal streets of the town. See the new General Post Office in the Zeil, the magnificent Opera-house at the Bockenheimer Thor, the Exchange in the Schillerstrasse, the Main with its bridges, the different monuments (Hessian and Warriors' monument, the monuments of Emperor Wilhelm I., of Guttenberg, Goethe, Schiller, Boerne etc.) the house in which Goethe was born, the Goethe-house as it is called, in the Grosser Hirschgraben 23 (daily 8—1 and 3—6 o'clock, Sundays 10½—1 o'cl.), the Cathedral, St. Paul's church, St. Peter's church and the town-hall, the so-called Roemer with the Emperors' Hall (Mondays and Wednesdays 11—1 o'clock entrance free, other days open from 9 a. m. — 6 p. m., 50 Pf. entrance). After having seen these we can drive to the Zoological Gardens (entrance M. 1.), where we can also take lunch, and we shall perhaps have had time to see the Ariadne, Dannecker's celebrated master-piece, in the Bethmann Museum, Friedberger Landstrasse 10 (daily from 10—1 and 3—5, Sundays from 11—1 o'clock). After

*) On account of the frequent alterations the time for the trains can only be given approximately; the railway time-table should always be consulted.

lunch the town should be visited and then we have leisure to see the pride of Frankfort, the Palmengarten, Bockenheimer Landstrasse, (entrance M. 1.), where there is excellent band-music from 4 o'clock p. m. From there we can go straight to the railway-station and catch the fast train at 8. 40 p. m. In case of a visit being paid to the opera or the theatre there is another fast train leaving Frankfort at 11 o'clock.

On paying a second visit to this town the other sights that were omitted on the first visit will also be found attractive. We will only mention the following: Panorama, Corneliusstrasse 17 (entrance M. 1.); Luther-house, Buchgasse 15; Schoppenhauer-house, Schöne Aussicht 17; Palace of the Prince of Thurn & Taxis, grosse Eschenheimerstrasse 26; Eschenheimer Tower. — Städel's Picture-Gallery, Schaumainquai 63 (entrance free, Sunday 11—1 Wednesday 11—4, other days 10—1 o'clock except Monday; at other times the entrance costs M. 1.). — Archive and Historical Museum near the Cathedral (Sunday and Wednesday 10—1 free, other days 9—1 a. m. and 3—6 p. m. 50 Pf.). — Art-union, Junghofstrasse 8 (daily 9—6 o'clock, M. 1.). — Senkenberg Natural History-Museum near the Eschenheimer Thor Wednesdays 2—4, Fridays and Sundays 11—1 free; other days 8—1 a. m. and 3—6 p. m. for a gratuity). — Permanent Exhibition of Pictures by prominent modern masters: R. Bangel, Neue Mainzerstrasse 66; Hermes,

Zeil 53—59; Schneider, Rossmarkt 23. — Exhibition and Museum of Art and Industrie, Neue Mainzerstrasse 49 (Daily 10—5, Sundays $10^1/_2$—$1^1/_2$, Sundays and Wednesdays free, other days 50 Pf. entrance.

BAD-HOMBURG.

Instead of taking the railway to Frankfort and going from there most excursionists to Homburg prefer to drive direct in a carriage through Friedberg or Ockstadt, Ober-Rosbach and Friedrichsdorf, which takes $1^3/_4$ hours. A railway from Friedberg to Homburg is also planned. All the sights of Homburg can be seen in one afternoon, they are: the Kurhaus, the highly interesting Saalburg Museum, the castle of the former Landgrave and the Park, but especially the busy life of the watering-place, which is most interesting in the afternoon. Anyone who does not fear a long drive can take the very enjoyable way through Ziegenberg, Cransberg (or Winterstein), Pfaffenwiesbach, Wehrheim and the Saalburg either going or returning.

THE SAALBURG

(with good restaurant) is a highly interesting Roman fort in good preservation; it lies to the north of Homburg, was built at the end of the first century and can be considered as a model

of its kind, there being no other one like it in Germany, France or Britain. The antiquities which have been found there are to be seen in the Saalburg Museum in Homburg. (Open from 3—6 p. m., entrance 50 Pf. At other times application should be made to the custodian Keller Ludwigstrasse behind the theatre.)

In a northerly direction from Nauheim the railway brings us in about 30 minutes to the university town of

GIESSEN.

Restaurant Stein's Garten, near the university; Hotel Kuhne; Hotel-restaurant Lenz near the railway station.

Through the narrow streets of the old town we come to the market-place with the town-hall and the old apothecary's shop with its carved wooden panelling. From here a street leads to an open square, called "Der Brand" from a great fire that took place there. Here we also find the old barracks, formerly arsenal, built in 1585 by Landgrave Ludwig the Elder, son of Philip the Magnanimous; near it the so-called "old castle", built in 1570 and formerly much used as a residence by the Hessian Landgrave. Not far distant, at the entrance to the botanical gardens, which are well worth visiting, is the so-called "Alte Kanzlei", built in the middle of the 14th century, formerly a

so-called *Wasserburg* (castle surrounded by moats). Far above the castle and the buildings attached to it, which are grouped round a narrow dark court, rises the *Bergfried*, popularly called the Pagan Tower. This was the dwelling-place of the rulers of Hesse till the time of Landgrave Ludwig IV. From here in the direction of Stein's garden-restaurant we come to the statue, beautifully executed by Schaper, of the celebrated chemist Justus von Liebig, who was for nearly 30 years professor at the university. The town, which is the seat of a considerable tobacco industry, offers nothing else of special interest. In the vicinity, however, there are some very beautiful excursions to be made, which would please every body. Thus an hour's walk from the bridge over the Lahn brings us to the

GLEIBERG (1036 ft.),

but in hot weather it is advisable to take a carriage as the way is entirely devoid of shade. From the summit there is a splendid view of the Lahn-valley, of some of the mountains of the Taunus, the Westerwald and the Vogelsberg. The still well-preserved castle, which was built in the 10th century and has since been partially restored, has a very interesting history. The oldest parts were built by the Saliers; however, after the extinction

of the royal branch of the Konradins, the castle fell into the hands of lateral relations, of the Counts of Moselgau and of Luxemburg, who as owners of the castle called themselves Counts of Gleiberg and resided there until the end of the 12th century. Afterwards it came into the possession of the Count of Meerenberg and then into that of the House of Nassau. All the proprietors enlargened the castle (Albert wing, Meerenberg wing, Nassau wing). After having been partially destroyed in the Thirty Years' War it remained uninhabited. (Good restaurant with moderate prices).

On the opposite side of Giessen lies the

SCHIFFENBERG (918 ft.)

about 1½ hours' walk from Stein's garden-restaurant. Some trains on the Giessen—Gelnhausen line stop at the foot of the mountain, from whence a delightful path through the wood leads in a short time to the summit, where there are buildings, which used to form a cloister for Augustine monks founded by Countess Clementine of Gleiberg in 1129. This afterwards became a seat of the *Deutsch Orden.* Since 1809 part of the Grand Duchy of Hesse. Good restaurant. Beautiful views from the windows of the principal building and from the terrace.

THE RUINS OF STAUFFENBERG.

(817 ft.)

To make this excursion it is best to go to Lollar by railway (10 min.), on the other side of Giessen, and from there to walk (¾ hour) to the castle, which consists of two parts, the upper and the lower castle, formerly belonging to the Counts of Ziegenhain and Nidda, then to the Landgraves of Hesse and now one of the possessions of the Grand-Duke of Hesse. In the year 1647 it was destroyed by the Swedish general Koenigsmark. In the lower castle there is a great hall with restaurant. Place of meeting for the Giessen and Marburg students.

It is well worth while to extend the railway journey about 30 min. beyond Giessen and go to the beautiful university town of

MARBURG

which lies round the foot of the castle-mountain in the form of a semi-circle. The terraces are built in such a manner that one can step out of upper stories of the houses at the back into another street or garden. In the evening when all the lights are lit the town offers, especially when seen from the railway, a peculiarly fairy-like appearance (Hotels Pfeiffer and Ritter).

On the summit of the mountain rises the castle which was founded in 1065 and has, since the

year 1247, served, alternately with Kassel, as a residence for the princes of Hesse-Cassel. Restored in the year 1866 it now contains the Hessian archives together with those of Hanau and Fulda. Here is the interesting hall of the knights and another hall in which, on the 2nd and 3rd of August, 1529, the religious debate on questions of sacramental doctrine took place between Zwingli with Oecolampadius and Luther with Melanchthon.

The Marburg University, which was founded in 1527, by Landgrave Philip the Magnanimous, and from 1625—1650 united with Giessen, was the first Protestant high school in Germany.

The greatest attraction of Marburg, to see which alone the town is often visited, is the Elisabeth's Church. Elisabeth, daughter of King Andreas VI. of Hungary, born in 1207 and educated at Wartburg, married the Landgrave of Thueringen and Hesse in the year 1221. She was distinguished for her great piety and benevolence. After the death of her husband, in 1227, during one of the crusades, Elisabeth with her three children was driven from Wartburg by her brother-in-law Heinrich Raspe. She then lived in misery in Eisenach till she was allowed to settle again in Marburg. Here she founded a chapel and a hospital in which she resided instead of the castle, attended the sick and lived like a beggar. Under the influence of her father-confessor she suffered such hard penance and castigated her

tender body with fasting and scourging so much that she died on November 19th, 1231, at the age of 23. She was interred in the chapel founded by herself. After this chapel had passed into the hands of the *Deutsch Orden*, and the Pope had, on May 27th, 1235, canonized Elisabeth, this order laid the foundation of a new church over the grave of Elisabeth in August of the same year. The dedication of this church took place in 1283, although it was not quite completed until the 14th century. This church is, after the Liebfrauenkirche in Trier, the oldest purely Gothic building in Germany, being in the form of a cross, with two towers, 311 ft. high, at each side of the west entrance. At the bottom the towers are quadrangular but higher up they assume the shape of an octagonal pyramid. They contain seven harmonious bells, of which the largest weighs 87 cwt. Through the richly adorned entrance between the towers the visitor enters the high arched aisle supported by ten mighty pillars; adjoining this is the principal choir and the two lateral choirs; the walls are adorned with coats-of-arms, the tombstones are also numerous and among them those of the Landgraves are especially remarkable. In the sacristy built on the north side there is the coffin of the patron-saint, worked with filigree, pearls and precious stones. Near the altars of the two side choirs there are some excellent paintings.

Behind the church are the old buildings of the Order, which served as a dwelling for the *Landkomthur*, or chief of twelve commanderies. When the order was abolished in 1809, its possessions went over to the state.

Opposite the church to the north-west stood the Luetzelburg. On the summit there is now a statue of the Electress Augusta of Hesse, surrounded by flower-beds, and therefore the hill is called Augustenberg.

The Town-hall with its artistic clock-work is also remarkable; likewise the newly erected university built in the Gothic style.

A very good excursion for a whole day is to got to

WETZLAR, BRAUNFELS AND WEILBURG-ON-THE-LAHN.

To do this one must take the 7.30 train from Nauheim arriving in Giessen at 8 o'clock and then take the train, 15 min. later, on the Giessen—Coblenz line to WETZLAR (Restaurant "Herzogliches Haus" and "Kaltwasser" at the railway station). Here the cathedral, which was partly built in the 11th, 14th, 15th and 16th centuries, but is still unfinished, is well worth seeing. At the Court of Justice, which formerly stood where the Post now is, Goethe was employed in the year 1772, and this town with its

environs, especially the neighbouring village of Garbenheim (Wahlheim) forms the frame-work to his stories in "Werther's Leiden". The paternal house of Lottie was the house of the German Order — now the barracks — in the Pfaffengasse. Lottie's room is still to be seen and many relics of Goethe's time. Goethe dwelt in the narrow winding Gewandgasse; both houses are marked by marble tablets, and also the house in the Schillerplatz, in which Jerusalem lived and died. Goethe's favourite resort, the Wertherbrunnen, lies outside the Wildbacher Thor. In the year 1849 a monument was erected to the poet. — At ten o'clock we continue our journey and in 45 minutes arrive at WEILBURG. The lovely situation of the town delights every spectator. After visiting the old castle which has often served as a residence for the Dukes of Nassau and from the windows of which there is a magnificent view we take lunch at the "Deutsche Haus" or in the "Hotel zur Traube" and half an hour afterwards we take the train to BRAUNFELS. From the station a well-kept foot-path leads us through the hunting-park of the Prince of Solms-Braunfels in an hour to the little town of Braunfels and the highly interesting castle, which contains a rich collection of antiquities. At the station there are also carriages and omnibuses if preferred. Now there is also a local railway line between the station and the castle. The building of this castle was com-

menced in the beginning of the 10th century and has lately been repaired in a most beautiful manner. There is a magnificent hall with a collection of armoury. A great number of paintings, many of them by Hans Deiker. Beautiful view from the terrace. (Schloss-Hotel and Solmser Hof.) Braunfels is renowned for its air. On returning we take the road through the lovely Muehlthal, from which we get many beautiful sights of the castle we have left. At 6. 30 a train leaves for Giessen, which is met by the fast train, arriving in Nauheim at 8 o'clock. There are, however, later trains if desired.

To visit Weilburg or Braunfels alone it is early enough if one leaves Nauheim at 9. 30 or 11. 30 a. m.

Another excursion greatly to be recommended is a visit to the

NIEDERWALD WITH THE NATIONAL MONUMENT.

The trains leaving Nauheim at 6 and at 9 o'clock in the morning for Frankfort are in direct connection wit Ruedesheim on the Rhine. (Restaurant Reinhalle).

From the station one can take a carriage to the cog-wheel railway *(Zahnrad-bahn)* which leaves every 10 min. for the Niederwald. The foot-path through the vineyards leads in the first place to the Tempel (915 ft.) from which one of the most

beautiful views in Germany is obtained and a delightful prospect of the Rhine. A short distance further on is the National Monument, designed by Professor Schilling in Dresden. The foundation-stone was laid on September 16th, 1877, in the presence of the Emperor William I. and the monument was unveiled, again in presence of the Emperor, on September 28th, 1883.

On a pedestal 82 ft. high stands the figure of Germania (34 ft. high), holding the German imperial crown in her hand. The small projecting socle in the middle of the lower socle bears figures symbolic of the Rhine and the Moselle. On the two corner socles of the pedestal are seen two allegoric figures (each 19 ft. high) of peace and war, between them the principal frieze embodying the "*Wacht am Rhein*", at the moment in which the German warriors are gathering round their leader (100 life-size figures). To the right of the Emperor, who is on horseback, is the King of Bavaria, to the left, the King of Saxony; underneath the words of the well-known song: "*Es braust ein Ruf wie Donnerhall*" . . . On both sides of the socles are relievos: the parting, and the return home, etc. On the front side of the smooth part of the postament is the inscription: "In memory of the unanimous, victorious rising of the German people and the re-establishing of the German Empire." On the other side the great battles are depicted.

After inspecting the monument and enjoying the panorama laid out below us, we go to visit the Adolfshoehe, the Rossel, the hunting-castle (restaurant). From here we return to the monument and to Ruedesheim, if we do not prefer to walk (40 min.) or go by rail to Assmannshausen. (Inns: Anker, Krone).

If we take the first train from Nauheim we have ample time to go to

WIESBADEN

and to be present at the afternoon-concert, to look round the town, until 8 or 9. 30 p. m. and then return to Nauheim, by 11 o'clock. To become better acquainted with Wiesbaden a whole day is necessary. The principal sights are: the spring "Kochbrunnen", the Kursaal, the new theatre, the statues of the Emperors William I. and Frederick III., the castle, the new Evangelic church, the magnificent town-hall and lastly, adjoining the beautiful park, the Neroberg, on which is situated the Russo-Greek chapel with the monument of the Duchess Elisabeth of Nassau, who is buried there. On the summit is a good restaurant and fine view.

For one day or even for half a day there are some excellent

EXCURSIONS IN THE TAUNUS,

which will certainly afford pleasure; we will only quote a few of them and for the rest we refer

to the "Guide through the Taunus", to be had at Bindernagel's and the "Map of the Eastern Taunus". In the whole of the Taunus the ways, as already mentioned, are marked with different coloured signs, and boards are placed here and there explaining these signs, which are of very great assistance to find out one's way.

Easy and very agreeable are the following little excursions: By rail to Frankfort and from there to Cronberg (40 min.), from there to Koenigstein an foot (¾ hour), returning through Hardtberg (look-out tower 1345 ft.) — Mammolsheim — Cronthal — to Cronberg (1½ hours) or from Koenigstein to Bad-Soden, 2 hours, and from there by rail to Frankfort (30 min.).

Somewhat longer, but uncommonly beautiful is the way: Cronberg — Koenigstein — Eppstein (2 hours 20 min.) and from there through the Lorsbacherthal to Hofheim (1¾ hours), from there by rail to Frankfort (32 min.). The train can also be taken at Eppstein (42 min.) if the way is too long.

The above-mentioned excursions can all be made very comfortably in a carriage which is always to be had in Cronberg. Between Cronberg and Koenigstein omnibuses run to meet the trains.

CRONBERG (1032 ft.) with an old castle is a favourite residence for summer guests. Good restaurant at the "Schuetzenhof" and "Frankfurter Hof". In front of the latter a street branches off

[illegible] leading to FRIEDRICHSHOF, the summer residence of the Empress Frederick.

KRONSTEIN (1242 ft.) with the ruins of an old castle. In the summer the most frequented of all the places in the Taunus. Hydropathic establishment and many beautiful villas (Country residence of the Grand Duke of Luxemburg, Baron Rothschild etc.).

KÖNIGSTEIN little old town with well-preserved castle now in possession of the Prince of Stolberg-Wernigerode. Restaurant: Hotel Seiler near the railway station. Also much frequented as a summer residence.

FALKENSTEIN (1398 ft.) with the ruins of an old castle, once the seat of an ancient family. Climatical establishment for consumptive persons.

For good walkers the climbing of the highest mountain in the Taunus, the FELDBERG (2930 ft.) can be warmly recommended. From the summit there is a magnificent and extensive view. One can go from Cronberg over the so-called Fuchstanz in 2½ hours and back over the "kleinen Feldberg" through the Reichenbachthal and Falkenstein to Cronberg in about 2 hours; or can return by the Saalburg to Homburg (3 hours) and from there by rail to Nauheim.

Should one pass the night in the Feldberg-house (good inn) to see the sun rise next morning, there is time to make the return journey through the Saalburg — Lochmuehle — Capers-

burg — Winterstein and then direct to Nauheim (about 5½ hours).

Among the excursions which can be made in one day we may also mention the one to

DARMSTADT,

the capital of the Grand-Duchy of Hesse. The fast train from Frankfort takes 27 min. The principal objects of interest are: the Grand-ducal castle, parts of which were built in different centuries, the oldest in the 14th and 15th centuries; the clock-tower, built by the Landgrave Ludwig IV. in 1664 in the baroque style. It contains a peal of bells belonging to that epoch. In the castle are the Grand-ducal archives, the library, the museum and the picture-gallery (open on Sundays, Tuesdays, Wednesdays and Fridays from 11—1 a. m. and Thursdays from 3—5 o'clock p. m.). The celebrated Madonna by Holbein in a separate room (apply to castle attendant). The other sights worth seeing are: the new theatre, the square in front of the theatre with the statues of Philip the Magnanimous and his son George I., the founder of the Hesse-Darmstadt line; behind the square is the entrance to the Herrengarten, in which is the tombstone of the Landgravine Caroline Henriette with the dedication of Frederick the Great: *Femina sexu, ingenio vir.* At the end of the Paradeplatz near the castle a large building

for the museum and the picture-gallery is being erected. In front of this building there is the beautiful Kriegerdenkmal (a monument in memory of the Hessian soldiers who fell in the war 1870/71, and in the middle of the square the monument of the Grand-Duke Ludwig IV., an exquisite sculpture by Schaper. Further on in the Louisenplatz stands the high monument (142 ft.) of the Grand-Duke Ludwig I., with its bronze statue designed by Schwanthaler. The Protestant church with very interesting tombstones of Hessian princes. The Catholic church built after the model of the Pantheon in Rome; here there is also a beautiful tombstone of the Grand-Duchess Mathilde of Hesse. Opposite this church is the Grand-ducal palace, built in 1862/65 in the Italian Renaissance style. The remains of members of the Grand-ducal family are now interred in the mausoleum on the Rosenhoehe, where there is a beautiful statue of the Grand-Duchess Alice, Princess Royal of Great Britain.

By taking the early train there is time enough to make a little trip from Darmstadt into the

BERGSTRASSE

with its castles and picturesque villages situated along the skirts of the Odenwald. Any one who is not acquainted with the Bergstrasse should, if by any means possible, visit it from Nauheim. If the time is short one can take the railway and

go to the nearest point, as for instance Castle Frankenstein from the station Eberstadt (1 hour) and from there back along the so-called Herrenweg in 1¼ hour to Seeheim (Bickenbach station) or only visit Jugenheim with its beautifully situated castle, formerly the favorite residence of the Emperor Alexander II. of Russia, or Auerbach with the Auerbach castle. In the afternoon there is also time enough to go in a carriage from Darmstadt to Burg Frankenstein and the Felsberg, with the highly interesting Felsenmeer and from there to Jugenheim.

If one does not wish to visit Darmstadt at the same time, it is best to take the 9 o'clock train from Nauheim and after 1½ hours' stay in Frankfort to arrive at Bickenbach at 12 o'clock. From here on foot (6 hours) or in a carriage to Jugenheim, Heiligenberg Castle, Felsberg, Auerbach Castle, Fürstenlager and the Schönberger Thal, finishing the trip at Bensheim (Inn: Deutsches Haus), where the fast train for Frankfort leaves at 10 o'clock p. m. After half an hour's stay in Frankfort Nauheim is reached at 12 o'clock.

If the whole trip is made in a carriage an earlier train can be used for returning, in which case it is better to begin at Bensheim and after visiting the other places mentioned return there, as all the trains stop at Bensheim. (Carriages for from 8—10 Marks to be hired at the "Deutsche Haus". It is advisable to order in advance.)

By taking the 6 o'clock train in the morning from Nauheim one can even visit first

HEIDELBERG

arriving there at 9 o'clock. There is ample time until 12 o'clock to view the town and its surroundings, but more especially to inspect the castle which was begun in the 13th century, but nearly destroyed by the French in the years 1689 and 1693. It is the grandest and most beautiful ruin in Germany; there are also some pretty collections inside and the celebrated "Heidelberger Fass". Then we return as far as Bensheim, take the above-mentioned drive through the Bergstrasse, and catch the slow train at Bickenbach or the fast train at Bensheim and return to Nauheim.

STEAMBOAT EXCURSION ON THE RHINE.

Very often after finishing the course of baths and occasionally during it the opportunity is seized to make a trip down the Rhine. For this two days are requisite, first visiting the Niederwald Monument and then going by steamer from Ruedesheim down the Rhine to Coblenz and returning the next day by the Lahnthal-railway through Ems; this excursion can, however, be done in one day, although it makes a rather tiring day. One takes the 6 o'clock train to Frankfort, leaving there at 8.30 for Mainz, from there by steamer

after 9 o'clock to Coblenz, where it arrives at 1 o'clock. The train on the right side of the Rhine leaves Coblenz at 3 o'clock and arrives at Ruedesheim at 5 o'clock; after having several hours to inspect the Niederwald Monument one arrives in Nauheim about 12 o'clock. 30 min. can be saved by taking the 3 o'clock train from Coblenz on the left side of the Rhine to Bingen and from there by the ferry-boat to Ruedesheim.

In a similar manner there are many other pleasant excursions to be made from Nauheim, of which we will just mention one more, a trip to

KASSEL AND WILHELMSHOEHE.

Kassel on account of its situation and surroundings is undisputably one of the most beautiful towns in Germany, possessing also much that is worth seeing: the Friedrichsplatz with the marble statue of the Landgrave Friedrich II.; the former electoral palace (can be visited on application to the custodian); the beautifully designed Museum Fridericianum (open Mondays and Thursdays from 11—1 o'clock); the Natural-history Museum (open Mondays and Thursdays from 10—1 o'clock); the Bellevue-Schloss (Schoene Aussicht-street), containing on the first floor a picture-gallery with many fine pictures of the Dutch school (open Sundays from 11—1 and Tuesdays, Wednesdays, Fridays and Saturdays from 10—1 o'clock, entrance free;

at other times application to be made to the custodian); on the underground floor there are works of art of the middle-ages (open Mondays and Thursdays 10—1 and Sundays from 11—1 o'clock). In the Staendeplatz is the Art-Gallery with a permanent exhibition (from 11—1 a. m., from 2—3 p. m.)

A long straight avenue of lime-trees leads from Kassel to the world-renowned WILHELMSHOEHE, where Art and Nature have united in forming a most delightful park. The tramway, starting from the Koenigsplatz takes the excursionist as far as the foot of the mountain, from there he quickly reaches the castle, built in the old Roman style, where Napoleon III. dwelt as a prisoner of war from Sept. 5th, 1870, till March 10th, 1871.

To the south of the castle lies the Chinese village of Mu Lang, a plaything from the time of Friedrich II.; still higher up lies the Loewenburg, an imitation of a castle of the 14th century, falling in ruins but still inhabitable.

The water-works, cascades and fountains, are in regular activity on Wednesday and Sunday afternoons; they begin playing at the summit and finish below in the castle, it is therefore better to ascend the hill on foot or in a carriage, and then follow the waters.

On the highest point stands the Octogon or Riesenschloss with the enormous copper statue of

Hercules (33 ft. high) whose club, wich is provided with steps inside, will hold nine persons. From here there is a magnificent view of the Harz and Thuringian mountains, etc.

Under the Octogon there is a grotto containing statues and the so-called "Vexirwasser", then the large basin and from there the grand watterfall with pine-trees growing on either side; this cascade falls over 525 steps down the mountain to the grotto of Neptune; here follow other waterfalls, aqueducts, etc., as far as the Mercur-temple.

If on leaves Nauheim in the morning at 7.30 or 9.30 one can go direct to Wilhelmshoehe, see the park and in the evening go to Kassel and there pass the night. The town can then be inspected the next day, leaving for Nauheim at 5 o'clock and arriving at 8 o'clock in the evening.

APPENDIX.

ANALYSIS OF THE NAUHEIM MINERAL-WATERS.

The amounts of solids are given in grammes as contained in 1000 grms of water.

Constituents.	Springs for the Baths.		Drinking-Springs.		
	No. 7.	No. 12.			
	Grosser Sprudel.	Friedrich Wilhelm-Quelle.	Kurbrunnen.	Karls-brunnen.	Ludwigs-quelle.
Chloride of Sodium	21,8245	29,2940	15,4215	9,8600	0,3411
Chloride of Lithium	0,0492	0,0536	0,0267	Traces	0,0012
„ „ Potassium . . .	0,4974	1,1194	0,5270	0,0731	Traces
„ „ Ammonium . . .	0,0550	0,0712	0,0371	0,0113	—
„ „ Calcium	1,7000	2,3249	1,0349	1,0578	—
„ „ Magnesium . . .	0,4402	0,5255	0,7387	0,2040	—
Bromide of Magnesium . . .	0,0060	0,0083	0,0063	0,0014	—
Sulphate of Calcium	0,0347	0,0352	0,0238	0,2277	0,0288
„ „ Strontium	0,0390	0,0499	0,0324	0,0087	Traces
Bicarbonate of Calcium . . .	2,3541	2,6012	1,1461	0,9515	0,3692
„ „ Magnesium . .	—	—	—	—	0,1928

Bicarbonate of Sodium . . .	—	—	—	—	0,0928
„ „ Iron	0,0383	0,0484	0,0262	0,0152	0,0098
Bicarbonate of Manganese . .	0,0065	0,0069	0,0080	Traces	Traces
„ „ Zinc	0,0104	0,0089	0,0070	Traces	—
Silicic acid	0,0325	0,0213	0,0186	0,0087	0,0121
Arseniate of Iron	0,00036	0,0002	0,00016	Traces	—
Phosphate of Iron	0,00046	0,0007	0,00034	0,0002	—
Oxide of Copper, Chloride of Thallium, Oxide of Lead, Nitric acid, Organic substances	Traces	Traces	Traces	Traces	Traces
Amount of solid constituents .	27,0886	36,1695	19,0549	12,4196	1,0478
Absolutely free carbonic-acid gas	2,3764 = 1216,6 ccm	1,9777 = 1039,9 ccm			
Semi-free carb. acid gas contained in the bicarbonates .	0,7343 = 375,7 ccm	0,8123 = 416,2 ccm			
The active carb. acid, *i.e.*, the free and semi-free together	3,1107 = 1592,3 ccm	2,7900 = 1456,1 ccm			
Temperature { Celsius . . .	31,6°	35,3°	21,1°	15°	18,8°
Temperature { Fahrenheit . .	88,88°	95,54°	70,55°	59°	65,84°

PRICES OF BATHS AND INHALATION.

Thermal-brine bath with fixed hour	M.	2.00
" " " " " " for children	"	1.30
" " " " " " and sep. dressing-room	"	3.00
" " " " " " " " " " for children	"	2.20
" " " without fixed hour, bath-house VI	"	1.50
" " " " " " " " II and III	"	1.30
" " " " " " " " VI for children	"	1.30
" " " " " " " " II and III " "	"	1.00
" " " " " " " " VI in the afternoon	"	1.00
" " " " " " " " III " " "	"	0.80
Brine bath with fixed hour	"	2.00
" " " " " for children	"	1.30
" " without fixed hour	"	1.30
" " " " " for children	"	1.00
" " " " " in the afternoon	"	0.80
Effervescent bath with fixed hour	"	3.00
" " " " " " for children	"	2.20
" " " without fixed hour	"	2.20
" " " " " " for children	"	1.30
" " " " " " in the afternoon	"	1.50

Current effervescent bath in the forenoon	M.	5.00
„ „ „ „ „ „ afternoon	„	3.00
„ thermal-bath	„	2.80
Fresh-water bath	„	1.50
„ „ „ for children	„	1.00
Shower-bath	„	0.70
„ „ combined with thermal or brine bath	„	1.50
Hip-bath (brine or fresh-water)	„	0.60
Additional ticket for mother-lye, per litre	„	0.15
„ „ „ „ ice	„	0.20
Ticket for inhalation without separate apparatus	„	0.50
„ „ „ with „ „	„	0.70
Season-ticket (for 10 times) for inhalation without sep. apparatus	„	4.00
„ „ „ „ „ „ with „ „	„	5.00

BATHING-REGULATIONS.

§ 1. The bathing-houses are open from 6 a. m. till 6 p. m. From 12.15 till 2 o'clock and after 5.15 p.m. no baths are prepared.

On Sundays and holidays the baths are closed in the afternoon and no baths are prepared.

§ 2. Guests who wish to take a bath at a fixed time should give notice of it to the superintendent of the bathing-house in which they desire the bath and inform her of the hour they would like; the superintendent enters the requests in a list and if the time desired is already bespoken she assigns another time for the bath to be used until the hour required is free.

Those visitors who have thus ordered their baths at a fixed hour must be in the waiting-room in due time — in cases of doubt the clocks in the waiting-room are alone taken into consideration. Any person being absent more than 10 minutes after the beginning of the time fixed upon, his bath-room may for that day be otherwise disposed of and he must wait until another room is free.

If a person desires to omit a bath which has been previously ordered, the superintendent must be informed at least 2 hours before the time, otherwise the bath will have to be paid for.

Any one who omits his bath twice in succession without giving notice loses his right to the time agreed upon and takes the place of a newly arrived visitor.

§ 3. Baths are only given on presentation of a bathing-ticket bearing the stamp of the day; the attendants may not, on pain of immediate dismissal, either prepare baths without first receiving such a ticket or buy and get it stamped at the request of any visitor; the public will therefore see that they provide themselves with bathing-tickets and get them stamped by the superintendent of the house in which they desire to take a bath. Baths which

have not previously been ordered will be given in the order in which the tickets have been stamped, therefore the public are requested not to leave the waiting-room until their number has been called out by the superintendent; if they are not present on the calling out of their number they are treated as newcomers.

After 5.15 p. m. no more tickets are stamped.

§ 4. It is not allowed to remain in the corridors of the bathing-house.

§ 5. The bathing-ticket entitles the owner to the use of the bath-room, for the space of 45 min.; should the bather remain more than 10 min. longer, he is liable to double pay, *i.e.* to have to present another ticket.

§ 6. Unused bathing-tickets are not available for the following year. Such tickets can only be taken back during the course of the season; the money will be refunded at the ticket-office on receipt of instructions from the Badedirection, to whom it is necessary to apply, either personally or in writing, stating the reason for the non-using of the tickets.

§ 7. The ticket-office is open from 6 till 12.15 p. m. and from 2 till 5.15 p. m.; on Sundays and holidays it is closed in the afternon.

Persons who wish to have the bathing-tickets at reduced prices must obtain a certificate to that effect from the head of the Badedirection.

§ 8. The Badedirection can decide, if necessary, that baths at reduced prices as well as current-baths of all kinds shall be given only in the afternoon. Any such resolution will be made known to the public by the attendants.

Thermal brine baths above 37, 5° Cels. = 99, 5° Fahr. can only be given on presentation of a card from a physician, likewise current effervescent baths are only obtainable on showing a written order from a physician practising in Bad-Nauheim. In every case the Grand-ducal bathing-master has to decide about the time of the current baths,

therefore the public are requested to apply to him in all questions of this matter.

Children's baths at reduced prices are only given in the small baths appointed for that purpose. A large bath for a child can only be obtained on presenting a full ticket.

§ 9. Each person receives for a bath one towel and for effervescent baths a bath-cloth if desired. Other linen can only be delivered by the attendants on presentation of a corresponding ticket; the bathing-attendants are strictly forbidden to procure such tickets for the public.

§ 10. The bathing-attendants who are strictly forbidden to ask for gratuities, have to prepare the bath in the prescribed manner and every time the bell is rung must repair immediately to the bath-room and lend any assistance that may be desired in handing the towels or drying the bather. Their services cannot be claimed for any other help.

The attendants must always treat the visitors with attention and politeness. Any complaints in this respect or concerning the baths should be made to the Badedirection. The writing must bear the name and address of the writer otherwise no notice will be taken of them.

§ 11. Smoking is not allowed in the bathing-houses; dogs are not admitted in the same; visitors who show this want of regard for their fellow-bathers will be refused entrance to the bathing-houses.

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